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Minimally Invasive Surgery

- Laparoscopic Nissen Fundoplication
- Laparoscopic Assisted Vaginal Hysterectomy
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The Effects of Minimally Invasive Surgery

on the Future of Perioperative Nursing

By Darlene Stuttard, R.N.

Who would have predicted 10 years ago, that we would be performing hysterectomies, nephrectomies and bowel resections using a laparoscopic technique? To accurately predict the future of Perioperative nursing, as it relates to the ever changing aspects of Minimally Invasive or Mininal Access surgery, is a difficult task. Looking to the future, one must be receptive, yet scrutinizing, towards many controversial and innovative ideas. Minimal Access surgery has proven to be a viable alternative to the traditional open surgical methods. In the beginning, many surgeons and nurses were skeptical about this modality but over the last three years, patient benefits and anticipated surgical outcome have been well documented. With the technological advances in instrumentation and equipment, and the establishment of training and preceptorship programs, Minimal Access surgery has proven to be the way of the future; to date we have only seen the tip of the iceberg.

Hospitals world-wide must be prepared to institute the changes needed to implement Minimal Access surgery. Now more than ever, it is vital for the nursing and medical staff to work together as a team. With the inception of the international "wellness" programs and Minimally Invasive surgery, many new concepts in patient care have been implemented. Many of the issues to be addressed are a direct result of how Minimally Invasive surgery has affected, and will continue to affect, the health care system and the role of the perioperative nurse.

I hope the issues I am going to discuss will be thought provoking as well as a source of many new ideas for debate. While some of these ideas have already been tested in the United States, the concepts for Canada and many other countries, remain very much in the future.

In Canada we have experienced many changes in the health care system. The present economic times, the increase in health care costs and the decline in the value of the Canadian dollar has resulted in the reorganization of hospital services. These changes have included an increase in nursing lay-offs, closing of hospital beds and in some communities, closing of entire hospitals.

The concept of Standardization and Rationalization of services has also become the norm for todays health care system in Canada. Acute care facilities are beginning to use the same sutures, Orthopedic prosthesis, mechanical stapling equipment, and other medical and surgical supplies and equipment. Personal preference in product choice is no longer an option for doctors and nurses. Instead, products are being limited to what is deemed "clinically acceptable" by Materials Management committees.

The trend towards "centres of excellence" has also become a reality in Canada. The concept of designating specialities to each hospital has proven financially efficient due to the decreased costs of training, staffing, supplying and equipping a centralized location. Because of government cuts to hospital funding and reduction in staff, many of the nursing programs such as pre and post op visits, will be either cancelled, dramatically cut back, or designated to other than perioperative nurses. While health care agencies and hospital management realize they are required to provide safe standards of nursing care: adequate funding for these programs is not available.

Author

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Trends in Patient Care

With the rapid advance in technology and the onset of Minimally Invasive surgery, it is estimated that perhaps 80% of the surgical procedures will be provided on an outpatient basis by the year 2000.[1] "What is now a trend towards less invasive, less radical surgery whenever possible will be a way of life in the 21st century."[2] Programs such as separate day surgery or ambulatory units and short stay units have become a viable alternative in Canada. These units have placed a demand on the health care system to continue to provide high quality patient care at the lowest possible cost.

The types of ambulatory surgery units being used are:

1. Hospital Controlled Integrated Units

These units are located within inpatient operating suites in hospitals and are the most common because they use existing facilities, personnel and equipment. They also pose minimal financial risk to hospitals.[3]

2.Hospital Controlled Autonomous Units

These separate units located within a hospital, do not share the expensive overhead of an inpatient suite, but do provide the advantages and financial savings of freestanding units.[4]

3. Hospital Satellite Units

These autonomous units are sponsored by a hospital, but located away from the hospital site.[5]

4. Freestanding Ambulatory Surgical Centres

These centres are autonomously operated and completely independent, both geographically and administratively, of other health care facilities.[6]

With the exception of the satellite unit, Canada presently uses all of these systems with much success. Our surgeons and physicians have not yet felt the competiveness or the need to open private centres in Canada, and therefore the freestanding outpatient units are rarely found among the provinces. The more acceptable practice is to direct patients towards a hospital setting. As long as the government supports this practice, freestanding outpatient units or other prototype systems, will remain a way of the future for Canada.

While the free standing units appear to be very popular, and have continued to grow in numbers in the U.S.A., Linda Groah, the Director of Surgery, Kaiser Medical Center, San Francisco, feels that, "The trend towards constructing free-standing outpatient centres will be reversed. Instead, hospitals will build ambulatory surgical facilities that have a separate entrance, waiting room and recovery room but will use the hospital's main ORs."[7] This idea appears to be more realistic and would likely gain the support of Canadian hospitals, the medical profession and government officials. The advantages of this concept would include the fact that surgeons would have access to hospital supplies, equipment and trained personnel as well as having immediate medical access, should a complication occur. A major concern for nurses in the setting up of freestanding units, is that all patients have a right to receive the same high standard of nursing care as provided in a hospital setting.

Other cost efficient developments in Canada include the introduction of Pre Admission Assessment programs, Short Stay Surgical units and Same Day Surgical units. With these new systems patients scheduled for surgery are admitted as outpatients to the Pre Admission clinic any time from the morning of, to two weeks prior to their scheduled surgery date. It is the responsibility of the patient's family doctor or surgeon, to arrange for the patient's surgical consent, history and physical, and the results of any tests performed prior to the patient's arrival to the clinic. All pre admission testing can then be evaluated on this visit and any additional laboratory and radiology tests, E.C.G. and any consultations that are required, are performed at this time. This process has virtually eliminated cancellations from the O.R. slate those patients who were not medically fit for surgery or who should have been admitted to the hospital as an inpatient.

The nursing assessment process begins upon admission to the clinic. The patients and their families are given instructions on the preoperative and postoperative needs of the patient. Teaching videotapes and the postoperative teaching aids are also shown and discussed at this time. The patients who go through Saskatoon City Hospital's Pre Assessment program, arrive at the hospital two to three hours before their surgery. Following surgery they are admitted to the Short Stay Unit which is open from 0730 Monday until 1600 hrs. Friday. Those patients who are unable to be discharged on the Friday, are then transferred to another surgical ward which can meet their needs. The interim stay unit or short stay surgical unit in the United States operate in a similar fashion to Canada's short stay units, although in the U. S., they only allow a maximum of stay of 72 hours.[8] These programs are still relatively new to Canada, but with careful monitoring and revisions, they will continue to improve as positive methods of delivering health care. Over the past year, patients who have been processed through this system have been very pleased with the results; the staff are also very enthusiastic about its potential. Other systems for delivery of patient care being used in the United States are:

1. The 23-hour Unit or Observation Unit

These units are designed to monitor patients for a period of less than 24 hours. Although these units are located within the hospital setting, they are considered outpatient units for billing purposes. These units also provide the medical and nursing staff with an opportunity to access the patient's records with regards to the possibility of hospitalization or discharge.[9]

2. Hospital Associated Hotels

These hotels are usually freestanding and owned by non hospital developers. They provide special services such as discounted rates, transportation and special diets for individuals designated by the hospital. These hotels are especially useful for patients who live a fair distance from the hospital and require postoperative attention before returning home. Some of these programs require that another person reside in the hotel with the patient. [10]

3. Recovery Care Centres

"These centres permit freestanding surgical facilities to take on surgical patients who are relatively healthy yet need up to 72 hours to recover. The recovery centres meet patient needs in a comfortable environment at a reduced cost."[11]

Surgery and the Elderly

"As the number of people more than 75 years of age increases, the demands on ambulatory day surgery, operating room, and PACU nurses will increase."[12] Studies have been shown that patients over the age of 75 require one third more surgery than any other age group and an increasing number of these very elderly patients are now using ambulatory surgical units. [13] These units are not only cost-effective but they also "reduce the risk of patient exposure to hospital pathogens, decrease patient anxiety, and allow family and friends to be present during their preoperative and postoperative periods."[14] To address the special needs of the elderly undergoing surgery, nurses who specialize in Geriatric nursing should either be hired to work on or collaborate with nurses who work in these units.

Patient Selection

With the increase in the types of surgery which can now be performed on an outpatient or same day basis, the process of selecting patients for this type of service is crucial to the patient's surgical outcome. "A number of individual factors also must be taken into account in patient selection. These include the patient's: age; general physical and mental condition; anaesthetic risk; attitude toward having such an operation on an ambulatory basis; and social and family situation."[15]

The Role of the Perioperative Nurse

The current and future trends in ambulatory surgery has created and will continue to create a dramatic impact on the role of the perioperative nurse in patient teaching, discharge planning, pain management and crises intervention. Realistically, "The nurse-patient contact is now reduced to a minimum. Preoperative teaching, family and patient counselling, and recovery must be completed within a few hours instead of a few days. The role of the nurse as patient advocate has grown in order to improve quality care and maintain public credibility.''[16] In lieu of the present and future economic constraints placed upon the hospitals, the role of the perioperative nurse in patient teaching, or as the patient's advocate, may need to undergo considerable evaluation and change.

During a round table discussion on OR Nursing in the 1990s, these comments were made regarding the future of perioperative nursing:

1. Linda Groah: "I would encourage the staff nurse to look to nursing for leadership. Nurses must unite if they are going to be a vital force in the future of the health care delivery system." [17] 2. Peggy Camp: "The OR nurse is going to be located outside of the operating room in the future. As the technology moves into areas like endoscopy and radiology, OR nurses will bring excellent skills and a new dimension in terms of their ability to assure that the sterile technique is followed during the procedure. In the past, we've not looked at OR nurses as having any place outside of the operating room, so I see the OR nurse becoming much more visible and active in other service areas."[8]

Unless OR nurses are taken out of the operating room and are hired in other OR related areas, such as the pre assessment units, the patient's preoperative and postoperative teaching will be done by ward nurses and possibly other non-nursing personnel. Should this occur, the perioperative nurse must realize

that the patient's total care may become multidisciplinary in nature. "It is important that OR nurses be willing to share their knowledge and expertise with the staff nurse and with each other and to be more open and collaborative as part of the profession."[19]

To maintain our professional standards for patient care, we may need to assume more responsibility in the educational process of these health care professionals. We must relay which information is pertinent to the patient's physical and psychological well being as it relates to his surgical experience. In other words, "the perioperative nurse assists colleagues in building and maintaining competencies necessary to provide safe, effective care to patients. This obligation may be fulfilled informally through role modeling, acting as a resource and mentor, or formally by serving as a preceptor or instructor in the clinical setting."[20]

Preoperative Assessment Tool

There have been many studies done and many articles written on the effectiveness of perioperative patient teaching and its effect on the patients postoperative outcome. Perioperative nurses can help the patient create positive attitudes towards surgery by offering them reassurance and support, and by sharing as much information with the patient and the patient's family or friends, as possible. "To prepare the patient for surgery, education must begin in the physician's office. It is particularly important for the physician's staff to understand the same-day surgery process and to be active supporters of that process. An important function of the physician's office staff is to promote the concept of wellness as opposed to illness. This philosophy must be emphasized by all health care professionals who have contact with the patient."[21]

The concept of perioperative and postoperative visits to the patient's home is an interesting phenomenon which is not yet practiced in Canada. Unfortunately, Canada's difficult geographic regions and shortage of available nursing staff as well as finances would prohibit this practice. The intent of this program is excellent, and with it ..."begins patient teaching, care planning, and discharge planning at home, thus saving time on the day of admission, increasing the accuracy of the information, and improving quality. These programs create a positive image for the hospital, enhance the public's perception of the nursing profession, increase job satisfaction for nurses, and improve continuity of care."[22]

Another assessment tool being used to assist the perioperative nurse in patient teaching is the preoperative and postoperative telephone call. This system is especially effective when a lack of nursing resources is present. Preoperatively, the nurse is provided with a written format of questions to be asked and information to be provided to the patient. While some of this information will be standard, other information should be specific to the patient's needs, age, and surgical procedure.[23]The postoperative phone call is vital to the nursing staff in that it allows for patient feedback to a job well done.[24] It also identifies areas in which problems have occurred or need to be addressed and resolved. Saskatoon City Hospital is presently using a written postoperative questionnaire, which patients are asked to complete prior to discharge from the hospital.

Pain Management

During discussions with my Canadian colleagues on Minimally Invasive surgery, there is a general consensus that patients undergoing this type of surgery are not receiving adequate postoperative sedation. Because this is not considered major surgery in the traditional sense, and because many of these patients are having surgery on an outpatient or same day basis, physicians tend to feel that large amounts of sedation are not required. While it is true that some patients do have a high pain threshold, it should not be assumed that Minimal Access surgery is not painful. In a recent paper published in the OR Manager, federal guidelines were issued in March, 1992 which state, "Patients having surgery should receive more aggressive pain management before, during and after surgery than is conventionally given."[25] The guideline calls for more patient involvement in treatment decisions and for more team-work between care-givers and patients.[26] In other words, the patient should be given information on the types of pain management available postoperatively and the choice of which therapy will be used.[27]

Advanced Laparoscopic surgery, such as Bowel Resections, Thorascopic Lobectomies and Laparoscopic Nephrectomies, necessitate the use of 30 mm trocars or small muscle splitting incisions to remove the specimen or to perform the bowel anastomosis. These incisions and the prolonged insufflation of the abdominal or peritoneal cavity, as well as the insertion of chest tubes, or other catheters postoperatively, constitute the criteria for "acute" pain and require appropriate sedation. Some patients will require only a mild analgesia, while narcotic sedation is often required for a short period of time, especially for those patients having advanced Minimal Access surgery.

Staffing in the O.R.

There has been an on-going debate as to what the future will hold for operating room nurses. In years past, many OR's in Canada made the move towards an all Registered Nursing complement. In doing so, they eliminated the need for OR technicians. Due to budget restraints, many hospitals in Canada, have now had to re-assess their staff mix and provide one operating room technician per theatre, if possible. It is interesting to note that many discussions in the U.S.A. also question the future of OR staffing. In 1990, Linda Groah stated, "It is going to be very important for the nurse managers to identify the role of the OR nurse versus the technician and to carve out a role for the technician. "[28]

Past AORN President, Mark L. Phippen, in one of his President's Messages stated that "Unlicensed assistive personnel have a role in the delivery of patient care, and it affirms that assistive personnel should be used in a manner that assures appropriate delegation of nursing functions and adequate direction and supervision."[29] He also feels that perioperative nurses must be accountable for the quality of care given in the OR by developing nursing policies, procedures and other standards of nursing practice, while the technicians on the other hand, "fulfil the roles of scrub people and assistant circulators."[30] In his closing remarks, he adds, "Perioperative nurses must consider the effect of economic restraints and the nursing shortage on the surgical services they provide. Assistive personnel have a place in nursing, and technicians have a place in perioperative nursing. Perioperative nurses must determine how highly skilled technicians/ technologists can complement nurses' work, not complicate it."[31]

Educational Component

It has been suggested that because Minimal Access surgery is becoming more technical and less invasive, the demands on the OR staffs expertise has risen dramatically. Many of my peers in Canada also have a preconceived notion that Minimally Invasive surgery is technically more challenging than open surgery for the OR team. When we trained numerous surgeons, OR nurses and technicians in Minimal Access surgery at Saskatoon City hospital, the most common comment from the nursing staff was, "this surgery can be very boring"; it did not offer them the challenge they expected. There was a time when a good scrub nurse was able to hold a retractor with one hand and hand- off instruments, wring out lap sponges and tear open a suture package with the other hand. The mark of a good scrub nurse today is learning how not to become sea sick from watching the T.V. monitors, and still pretend to be interested and alert after a 10-hour Total Colectomy.

The surgical supply companies have made tremendous progress in developing new and better instrumentation and equipment which will enhance each of the new procedures. In collaboration with many of the surgeons, the companies will continue to experiment and develop instruments and equipment as the vision for future Minimally Invasive surgery unfolds. It can be argued that while the technology of these instruments and equipment has progressed, the basic principles of Endoscopic surgery have not changed since we began performing video Arthroscopies and Gyne Laparoscopic surgery. We have perhaps made this method of surgery very glamorous, but in doing so, have intimidated the OR staff in the process. Continual inservice programs will allow an easy transition for the staff into all types of Minimally Invasive surgery.

Looking into the Future

1. "Hospitals performing outpatient surgery and same day surgery will introduce a "pick up and tuck in" service to compete with other hospitals. This service will pick up patients at home the morning before surgery and return them after discharge accompanied by an RN. The RN will be available during the night and visit the patient the following day."[32]

2. "Hospitals will introduce focused-care centres, which conveniently include an operating room (OR), medical records, pharmacy, physical therapy room, X-ray facility, and laboratory on the same floor. A patient will be admitted, cared for, and discharged without transferring to another unit. This set up will be particularly effective for patients undergoing trauma, orthopedic, cardiac, pediatric, or gynecologic procedures."[33]

3. Video Room Surveillance

The new surgical suite at Poudre Valley Hospital in Fort Collins, Colorado has installed fixed video cameras in each OR which allow nurses to check the room

status on monitors at the control desk. For patient confidentiality, the cameras are located in the room so that the monitor does not show the patient's face.[34]

4. Video Pathology

The pathology communication system ..."transmits a video of the actual operative site to the pathology lab. While a surgeon is taking a specimen or biopsy for a frozen section, the pathologist can view the operative site and the frozen section area via the video. Once the pathologist finishes the frozen section slides, he can communicate back to the surgeon, by video and voice, what the slides show and what the pathology looks like."[35] This system is now being used in the OR suite at St. Vincent Medical Center, Toledo, Ohio.

5. Filmless Radiology

This innovative, yet very expensive, new prospect can store all radiology images in computerized form, including x-ray, CT scans, MRIs, and ultrasound. "The system can send the images from an archive to computer workstations in the same building and across long distances."[36] This technology now means the radiologists will read the films on a TV screen, instead of the traditional view boxes.

6. Overhead X-Ray Tubes

Rather than equipping ORs with portable X-ray machines, overhead X-ray tubes can be installed, which will enable two adjacent rooms to share the same generator.[37] While this system is more expensive than portable X-ray machines, it is a more convenient method.

7. Patient Teaching Aids

In the future, patients will receive written instruction by facsimile machines, broadcasting programs over cable television channels, or using self-instruction computer programs.[38] They may also receive preoperative teaching videos prepared by perioperative nurses to view in their homes.[39] All "routine preoperative teaching will include guided imagery for all patients over the age two."[40]

8. Waste

"Society's concern with the environment will be heightened, and all medical waste will be considered contaminated. The public will demand complete elimination of contaminated waste."[41]

9. Re-Cycle

Due to the increasing incidents of AIDS, Hepatitis and other infectious diseases, many of the products that are now being used in the hospital are disposable. These items are not only expensive to use but have also caused many discussions on how to dispose or recycle the end products. Many manufacturing companies have looked into the feasibility of having the hospitals return their own products for re-use. Perioperative nurses should become pro-active with their communities endeavours on re-cycling and collaborate with their medical colleagues on the re-cycling of hospital products. THINK GREEN!

10. Future Technology

"Genetic engineering, the restructuring or combining of cells, will be used to prevent genetic defects such as Tay-Sachs disease and sickle cell anemia. By the year 2000, genetic engineering may be effective against many kinds of retardation and behaviour disorders. Sometime around the end of the 21 st century, it may be possible to regenerate parts of the central nervous system, including even the spinal cord."[42]

"Skin and bone will be grown in the laboratory by taking cells from the patient and placing them in a controlled environment that will permit them to reproduce quickly. The tissue can then be used for grafts as an alternative to homografts and implants. Eventually, bone graphs and artificial joint implants will be obsolete."[43]

11. Computers

Computer technology is constantly changing and expanding its capabilities. In order for nurses to become a part of this evolution, computer training will be mandatory in the future. A new computer system called "intelligent computers will assist the perioperative nurse by providing an incredible knowledge base. In the future, computers with artificial intelligence (AI) will be capable of using expert surgical nursing knowledge bases; these computers will "sense" and "create" as well as reproduce images, recognize print and vocal sounds, and they will "understand" and "reason". These AI systems will simulate expert clinicians capable of applying judgement and logic to assist the perioperative nurse in caring for surgical patients."[44]

12. Robots

As perioperative nurses we want to believe that regardless of any new technology developed, the human element in patient care will always remain. While robots will never replace many of the nursing functions, they do have a place in the OR. By automating the work areas, robots can "provide meticulous cleaning of surgical rooms and areas, as well as washing instruments, assembling supplies and packs, and performing other repetitive tasks in the surgical suite."[45] They will also be developed to assist in retraction and to hold cameras. "The robots will be controlled by a circulating nurse".[46]

13. Staff Training

"In the year 2000, conventional classrooms for holding inservice instruction and staffdevelopment sessions may be replaced by six-foot-square cubicles. Continuing education may take place in franchised learning stores or private learning centres. In such learning centres, all instruction would be individualized. It could also be available where ever a computer terminal can be plugged in.

Unlike today, when instructors and learners in the OR must plan their instruction time around surgery schedules, formal instruction could be pursued at the learners own speed and scheduled around recreation, home activities, and work. Interested learners could contract for their education through learning centres in shopping malls, hospitals, libraries and multimedia centres, or in the individuals home. Learning would be individualized, fun and convenient."[47]

14. O.R. Attire and Set-Up

"Elaborate scrubbing rituals, gowning and gloving will soon be a thing of the past. Instead, OR nurses will step into custom-designed environmentally controlled jackets, complete with nonpenetrable hand coverings and hoods. Then they'll enter a special chamber that sterilizes with light. This procedure will eliminate waste."[48]

"Many of our tried-and-true rituals will be gone. For example, sponge and instrument counts will no longer be necessary because all incisions will be puncture or stab incisions just big enough for cameras and operating tools."[49]

15. Sterilization

"Faster, better sterilization methods will include a hand-held light bar, which will sterilize all instruments and equipment needed for an invasive procedure. Any time an instrument or person is suspected of being contaminated, a sweep of the light bar will handle the problem. This method will also be used to disinfect the patient's skin before invasive procedures."[50]

16. Documentation.

"All patient care will be recorded at the point of care with pocket-sized computers that use bar codes to collect data. Even arm bands will have bar codes that provide information. This system will help prevent errors."[51]

17. Trends in Surgery

"Open-heart surgery, including by-pass surgery will be performed endoscopically. The only exceptions will be some surgeries involving congenital defects. Gynecology surgery will move into the doctor's office, just as ophthalmic and plastic surgeries have already."[52]

"Surgical teams will use less-invasive procedures, which reduce patient trauma and shorten recovery time. For instance, in oncology, new therapies, especially photodynamic therapy, will limit the need for extensive cancer surgery. Refinements will be made in local anesthetics, catheters, lasers, microsurgical instruments, fibre-optic and ultrasound endoscopes, and percutaneous and extracorporeal devices."[53]

18. Ethical Dilemmas

"Ethical dilemmas will be a major concern of perioperative nurses as more intrauterine surgery and organ and tissue transplants are performed. One dilemma will be whether "do-not resuscitate" orders should be routinely rescinded when terminally ill patients undergo palliative surgery."[54]

19. Administrative Concerns

"Direct reimbursement for the RN first assistant will become a reality. Surgeons and RNs will become partners in private practice to care for surgical patients. Nurses will do the preoperative assessment and teaching, assist during surgery, and follow up with postoperative rounds, teaching, and care. The surgeon will be involved postoperatively only if complications arise."[55]

Summary

In light of the present economic times, perioperative nurses must set realistic and attainable goals for themselves. We must invoke practical and logical methods of maintaining, or improving, the standards of nursing care, given the limited governmental and hospital budgets. We must look to each other for guidance and support in order to unify our efforts to meet the future changes in the delivery of patient health care. Periop-

erative nurses must accept their constantly changing roles, and they must be prepared to meet these changes head on. Taking all of this into consideration, What do you think the future of perioperative nursing will be?

In an article in the *Nursing Administration Quarterly,* Colleen Harvey states that, "In a highly technical environment, the perioperative nurse will be the "high touch," human element required to maintain a high order of ethics and values and to advocate excellence in nursing care for the surgical patient. The perioperative nurse will institute and maintain standards for the quality of practice and for comprehensive, cost-effective care for each patient."[56]

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Laparoscopic Nissen Fundoplication

A Minimal Access Alternative

By Priscilla Troch, RN, BScN, and Helen Jansen, RN

Laparoscopic Nissen Fundoplication is fast becoming the preferred treatment for patients suffering from gastroesophageal reflux (GER) disease. Traditionally, correction of GER has been accomplished by an extensive invasive conventional "open" Nissen Fundoplication (Low, 1988). But, in the advent of laparoscopic surgery a successful repair of GER is now being achieved laparoscopically. GER is defined as the retrograde flow of gastric contents into the esophagus (Hunter, 1993). Although virtually everyone has experienced GER, the symptom of "heartburn" is masked by natural physiological reactions. It is suggested that GER afflicts some ten percent of the general population (Hunter, 1993; McKernan, Wolfe, & MacFadyen, 1992). Treatment of GER for many has been managed by the use of pharmaco-therapeutics in conjunction with lifestyle alterations (McKernan, Wolfe, & MacFadyen, 1992). There are those however that remain symptomatic despite prescribed therapy, and surgical intervention is then indicated. Nissen Fundoplication simply, is a procedure whereby the fundus of the stomach is wrapped around the esophagus to form a sphincter like band that will reduce/prevent the reflux of gastric contents into the esophagus. A laparoscopic approach to correction of GER offers patients an attractive alternative to life long drug therapy or a major transabdominal or transthoracic surgery (Bagnato, 1992).

Abstract

The preferred treatment of gastroesophageal reflux has traditionally been Nissen fundoplication. This involves an extensive abdominal or thoracic incision and subsequently results in patient discomfort, an extended recovery period, and increased overall costs. In the advent of laparoscopic advances surgical correction of symptoms of gastroesophageal reflux are now being offered through minimal access surgery. Increased patient satisfaction, decreased costs, and a quicker return to activities of daily living, suggest why laparoscopic Nissen fundoplication, (LNF) is fast becoming the preferred alternative to correction of gastroesophageal reflux disease. This article will review gastroesophageal reflux and describe one surgical method of laparoscopic correction. The role of the perioperative nurse and implementation of the nursing process regarding this surgical procedure will be highlighted.

Preoperative Preparation

In preparation for minimal access surgery the patient undergoes physiological tests of the gastrointestinal tract in order to obtain a thorough GI history

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Table 1

Fibreoptic Esophagogastroduodenoscopy : Allows for visualization of the esophagus, stomach, and upper small bowel with a fibreoptic gastroscope. The condition of the upper gastrointestinal tract is also evaluated for the presence of inflammation, ulceration and strictures. If biopsies are obtained, changes in the cellular structure of the GI tract may be detected.

Esophageal Manometry: Examines the motor function of the upper esophageal sphincter, esophageal body and lower esophageal sphincter. A pressure sensitive perfusion catheter filled with water is introduced to the GI tract. As motility of the GI Tract occurs, the catheter is compressed and a pressure read out in mmHg is obtained as a wave form for evaluation.

24 Hour Esophageal pH: Determines the frequency and duration of acid reflux into the esophagus and examines the correlation between symptoms and reflux events for a 24 hr period. A pH probe is inserted transnasaly and positioned above the lower esophageal sphincter. The probe is connected to a small monitor and the patient is discharged home. A diary of activities and resulting symptoms are kept by the patient for a 24 hr period. The probe is removed and results evaluated at the motility lab.

Barium Swallow: This procedure is performed in the radiology department and allows the physician to view the patients gross gastro-intestinal anatomy.

and establishment of the probable cause of the patient's problematic gastric symptoms. If evaluation determines acid reflux as the primary cause of the patient's symptomatic esophagitis, the patient will require surgical intervention. In preparation for LNF a number of diagnostics are routinely performed including: fiberoptic esophagogastroduodenoscopy, esophageal manometry, 24 hour pH, GI motility, and Barium swallow (**Table 1**).

Once GER is confirmed and surgical intervention is indicated, the patient is referred to the preassessment unit (PAU) for a routine surgical work up. A CBC, electrolytes, creatinine, glucose, ECG (if indicated), and urinalysis are obtained with results submitted to the patients chart. Preoperative education is initiated in the doctors office and continues throughout the perioperative patient experience. Education tools include: a preoperative video, information pamphlets and surgery specific information sheets. Any necessary consults are ordered at the time of the preassessment unit visit. The patient then returns on the day of surgery at the specified time to the Same Day Admit Surgery (SDAS) service for standard hospital admission

In the Operating Room the efficiency of both equipment and personnel are mandatory for a successful procedure. The suction irrigator and a cabinet complete with a TV monitor, light source, high flow $C0_2$ insufflator, and camera are brought into the room, (VCR on request). The circulating nurses gather the basic laparoscopic instruments(**Table 2**) along with any necessary equipment and supplies (**Tables 3 & 4**) for the case, and arrange the theatre furniture appropriately. The patient is transported to the Operating Room one half hour before the scheduled start time by the OR porter. The patient is received in the Operating Room's perioperative assessment area, where routine preoperative criteria are checked, patient assessment performed and documentation initiated. Emotional support is offered, information provided and questions answered as necessary. The patient is then transported to the OR theatre. The nurse directs his/her attention to the anaesthetic phase of patient intervention, and patient monitors are placed appropriately. Safety measures and ongoing supportive care is provided at all times. The patient is continually informed regarding changes in his/her environment in order to reduce anxiety. The induction phase is critical, the nurse prepares for a "crash" induction as the patient is at high risk for gastric reflux secondary to GER. Once the patient is in a state of general anaesthesia and the airway is secured, the nurse is free to assist with patient positioning, protection, and safety practices.

Intraoperative Phase

The patient is placed in lithotomy position and the legs secured in Allen stirrups by the operating surgeon. The patient is prepped using an appropriate prep solution, and sterile drapes are applied. The room equipment is moved into place (Figure 1) and the sterile field is created. Sterile equipment is handed up by the scrub nurse and secured.

Table 2

Basic Laparoscopic Instruments

10 foot fibre optic light cord	fine sharp dissecting clamp
insufflation tubing	fine blunt dissecting clamp
hooked scissors	heavy blunt grasping forcep
suction irrigator tubing	heavy toothed grasping forcep
short tubing for hydro dissection pump	10mm trocar and cannula X2
stainless steel saline bottle cap	metal suction irrigator probe
Verres needle	coagulation probe
reducer 10mm to 5mm	L- hook cautery probe and cord
ligaclip applier (med)	5mm trocar and cannula X 3

Additional pick items: 45cm grasper, extra small trocar with metal trap angled allis forcep with flexible trocar, 2 needle drivers (one with ratchet), cook needle driver, laparoscopic babcock, 0° telescope, and Hasson grasper.

Table 3

Special Equipment

Laparoflator	Zenon light source
Camera	Video monitor, (VCR for recording of
Hydro-dissection pump	LNF on request)
Allen universal stirrups X 2 with pads	Cautery machine with footswitch

Note: A case cart complete with instruments and supplies necessary for an open procedure is kept outside the room in case it is necessary to abort the laparoscopic approach.

Table 4

Supplies

# 42 Bougie	antifog
Raytex gauze	sutures
TB syringe & needle	# 15 blades X 2
Steri-strips	

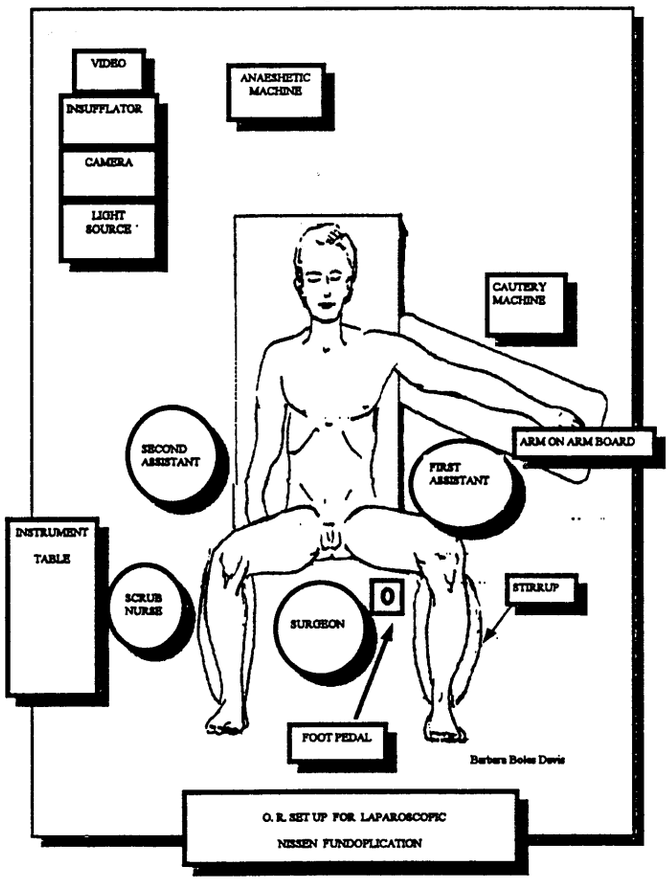
The unsterile camera is connected to the sterile telescope by the circulating nurse under direct guidance of the scrub nurse. The sterile camera drape is then extended to its maximum length and secured on the sterile field. Remaining ends including: cautery cord, light source, insufflation and suction irrigation tubing are then passed off to the circulating nurse and connections made appropriately.

Intraoperatively the nurses monitor and attend to the surgical teams needs including: ongoing assessment of the patient, equipment, and supplies that assist in the provision of quality care for the patient. The scrub nurse reviews and seeks information as necessary from the circulating nurses regarding general endoscopic instrumentation, their accessories and expected performance. She/he maintains the sterility, cleanliness and functioning of equipment and supplies throughout the procedure. Participation as an assistant when required is strongly supported and advocated. Dr. M. Anvari, a general surgeon at St. Joseph's Hospital performs the following technique to achieve a successful LNF.

Procedure

With the patient in lithotomy position, a verres needle is introduced into the abdominal cavity through a small incision made in the left upper quadrant. The insufflation tubing is connected and the abdomen is instilled with CO_2 gas which lifts the peritoneum, maximizes visibility and creates pneumoperitoneum. An initial cannula (10mm) is placed blindly 5cm

Figure 1



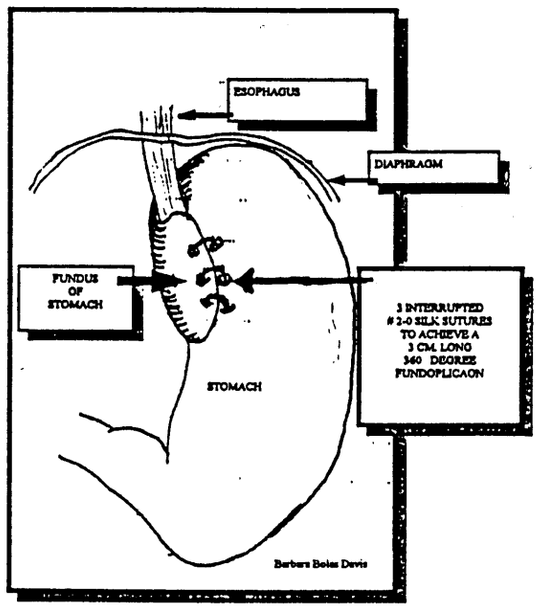
above the umbilicus, and the laparoscope is introduced. The remaining cannulas are then placed under direct visualization of the internal organs and vessels. Three 5mm laparoscopic cannulas complete with trocars are introduced as follows: in the right upper quadrant, in the left upper quadrant and below the xiphosternum. The remaining 10mm cannula is finally placed 5cm to the left of the umbilicus. If the surgeon anticipates a problem with insertion of the verres needle or trocars, a 5mm trocar and laparoscope may be used initially instead of the 10mm trocar.

The liver is retracted upwards with a suction tip in order to maximize visualization of the gastroesophageal junction. The division of the peritoneum over the gastroesophageal junction is accomplished using electrocautery or scissor dissection. The anaesthetist is directed by the surgeon to insert a # 42 Bougie (a larger size may be necessary depending on motility) into the esophagus assuring localization of the esophagus. The esophagus is then mobilized about 5 cm through the esophageal hiatus. Identification of both the anterior and posterior vagus is achieved and both are protected appropriately. Once a satisfactory mobilization is achieved, a curved grasping instrument is passed behind the esophagus and the fundus of the stomach is pulled behind and to the right of the esophagus. Interrupted 2-0 silk sutures are then placed between the fundus and esophagus and a 3 cm long, 360 degree fundoplication is completed (**Figure 2**). At this point the anaesthetist is directed to remove the Bougie. The pneumoperitoneum is deflated and all cannulas are randomly removed. Both the fascia and skin are approximated using #1 and 3-0 vicryl sutures respectively and steristrips applied. The described procedure including set-up and anaesthetic time is approximately one and one half hours.

Immediate Post-Op

Drapes are removed and the patient is assessed and returned to a supine position. The patient's emergence and immediate recovery in the Operating Room is orchestrated by the anaesthetist. During emergence of

Figure 2



anaesthesia the nurse remains in attendance to respond to emergent situations and provide safety and comfort measures to the patient as necessary. The patient is assessed, extubated, stabilized and transferred to the Post Anaesthetic Recovery Room where standard postoperative assessments are performed, with an estimated length of stay of one hour. Once discharge criteria have been met the patient is transported to the nursing unit.

The morning after surgery, the patient undergoes a gastrographin swallow to confirm a secure anastomosis exists. If the X-ray is negative (no apparent leaks), the patient starts on a fluid diet and is discharged on the second postoperative day. The patient is educated to remain on a fluid or semi-solid diet for approximately one week, and gradually resumes eating solid foods. All patients are followed up regularly with 24 hour pH and esophageal manometry studies at six months, two and five years, unless otherwise determined.

Results

Over a seventeen month period (Aug. 1992-Apr. 1994) at St. Joseph's Hospital in Hamilton Ontario, 105 LNF's have been performed. Of this number only one case required conversion to the conventional open Nissen Fundoplication. Dr. Anvari states, "all patients that have undergone this procedure have reported complete or partial relief of their symptoms". Post operative complications have been minimal and zero mortality reported.

Conclusion

Laparoscopic repair of gastroesophageal reflux has been demonstrated as an efficacious alternative to traditional radical laparotomy and thoracotomy approaches. Low morbidity, high patient satisfaction, less pain, shorter recovery and subsequently a quick return to activities of daily living are just a few of the benefits to minimal access surgery (Geagea, 1991).

Technologies and health care are rapidly advancing towards the minimally invasive approach. Continued research and development of equipment, techniques and surgeon expertise are required in order to empirically demonstrate the success of new laparoscopic approaches. Successful advanced minimal access surgery now being performed by our expert staff include: laparoscopic bowel resection, gastrectomies, hernia repair, appendectomies, liver biopsies and thorascopic surgery. St. Joseph's Hospital and its team of health professionals have embraced this challenging new field of minimal access surgery with enthusiasm. As a team we endeavour to remain on the cutting edge of knowledge and practices in our continuous striving for excellence in the provision of health care.

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Laparoscopic Assisted Vaginal Hysterectomy

By Pam Railton, RN, Lynn Kurylko, RN and Dr. C.M. Shah

Laparoscopic assisted vaginal hysterectomy (LAVH) is the latest advancement in gynecological surgery. Laparoscopy is a medical term used to describe insertion of a telescope into a sleeve into the abdominal cavity. In the past few years, technological advancements have made it possible to do extensive surgeries utilizing laparoscopy.

Abstract

Laparoscopic Assisted Vaginal Hysterectomy (LAVH) is the latest advancement in gynecological surgery. It is proving to be a viable alternative to abdominal hysterectomy.

Dr. J. Arneja and Dr. C. M. Shah have been doing LAVH since 1992. After completing 50 cases, a review of clinical experiences was undertaken. Indications for doing the procedures are almost identical, with fibroids being the most common indicator.

A list of instruments required for doing LAVH, along with a diagram of the room set-up are included to help those nurses who are in the preliminary stages of doing LAVH.

The procedure is described at length, beginning with positioning, prepping, and draping of the patient.

A telephone audit with 25 patients who had a LAVH or Abdominal Hysterectomy is also reported.

Complications, benefits, restrictions, and a cost comparison are discussed, including charts to show our results. The article concludes with an overview of the postoperative management of patients having LAVH.

It is now possible to do a vaginal hysterectomy by doing a laparoscopy - surveying the pelvic contents, separating the uterine attachments, fallopian tubes, ovaries, and main arteries.

As the uterus is too large to remove through a small cannula, it is removed through the vagina. Therefore, a patient who wouldn't normally be a candidate for vaginal hysterectomy can have an LAVH, thus avoiding a large abdominal incision and benefiting from a more rapid recovery.

In the following article, the indications, instrumentation, procedure and early clinical experiences comparing LAVH and abdominal hysterectomy will be covered. Complications, restrictions, benefits, costs and postoperative care for patients undergoing LAVH will also be discussed.

Indications

Dr. J. Arneja and Dr. C. M. Shah have been performing LAVH at the Victoria General Hospital since January 1992. After completing 50 cases they undertook a review of their clinical experiences. They found that indications for doing hysterectomies were almost identical between the two techniques - LAVH and abdominal hysterectomy. The most common indication being fibroids. (See Tables 1A and 1B).

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Instrumentation

1. Equipment and theatre set up:

i) anaesthetic machine
ii) electric table made ready for the lithotomy position with knee support stirrups
iii) high straddle table, low back table, and other basic furniture
iv) two video monitors, (TV screens) - the main video monitor opposite the surgeon has the camera attachment, video recorder and $C0_2$ insufflator
v) cautery with bi-polar and monopolar capabilities with the foot pedal to the surgeon
vi) a hydro-dissection machine on a stand with 1 litre bottles of sterile distilled water

2. Instrumentation:

Gyne Operative Laparoscopy Instruments

1 10 cm verres needle (regular)
1 15 cm verres needle (long)
2 5 mm trocars
1 storz 11 mm trocar and key
1 hook scissors - monopolar
1 hook scissors - long - monopolar
1 Metzenbaum scissors - monopolar
1 grasping forcep with ratchet
1 grasping forcep with teeth and ratchet
1 oviduct forcep
1 Babcock forcep 5 mm
1 Bipolar cautery forcep
1 Bipolar cautery cord-grey
1 J-hook cautery electrode
1 monopolar cautery cord-black
1 suction irrigator
1 probe with stopcock
1 Hulka tenaculum
1 extension for laparoscope
2 round grey seals
2 flat round grey seals
2 hourglass grey seals
2 clear seals
2 luer-lock plugs
1 white plastic tube
1 metal adaptor for monopolar forcep
1 0 degree telescope (soak)
1 30 degree telescope (soak)
1 laparoscope (soak)
1 5 mm light cable (soak)
1 insufflator tubing

Laparoscopically Assisted Vaginal Hysterectomy (LAVH)

1 Vaginal Hysterectomy instrument set
1 set gyne operative laparoscopy instruments
1 Valtchev uterine mobilizer
1 Nezhat-Dorsey pump/cannulae and tubing
1 laparoscopy pack
1 1/2 sheet
1 table cover large
1 vaginal pouch
1 double basin
1 single gown
1 double gown pack
1 prep tray
1 8 x 4 R-lO's
1 LAVH kit
2 #12 surgigrips
1 #10 surgigrip
2 universal downsizers
1 sterile foley bag
1 camera drape
1 set light handles
1 $C0_2$ insufflator tubing
1 sterile suction tubing
1 plastic tonsil suction
1 IV luer-lock extension
1 IV decanter
1 #14 red rubber catheter
2 20 ml syringes
1 50 ml syringe
1 5 ml syringe
1 fir tree adapter
1 small airstrip dressing
2 bandaids
1 Peri pad
1 Benefits pants
1 set gloves - surgeon, assistant, scrub nurse, circulating nurse
1 IV 1000 ml lactated ringers
1 IV tubing 3-way stopcock
1 specimen jar with formalin (med)
1 1000 ml bottles water
2 white stirrups
1 doctor's preference card& extras from card.

An LAVH kit prepared by *Autosuture* is also utilized. It contains the following instruments:
3 12 mm trocars with surgical grips,
2 universal downsizers,
endoshears with monopolar cautery capabilities, and endo-gia 30 v with cartridges, 6-8 cartridges.

Dr. Shah and Dr. Arneja use a 0° telescope draped with a sterile camera drape. A Nezhat-Dorsey hydrodissection pump, which comes with a sterile package of disposable tubings, is also used. The actual dissectors are non-disposable and come in a sterile box. All laparoscopic instruments are set up on the high table. The vaginal hysterectomy instruments are set up on a low mayo table. If at any point the LAVH becomes an open abdominal case, a sterile abdominal retractor set is added to the vaginal hysterectomy setup. The transition from laparoscopic to open abdominal procedure is done with a minimal disturbance or delay to the surgery.

The drugs used during the procedure are: warm Ringers Lactate with 5000u of heparin in a pressure bag for irrigation during the procedure, Ringers Lac-

Table 1A
Indications for LAVH
50 cases Jan.'92 - Nov. '93

27	Leiomyoma	54%
15	Menorrhagia / dysfunctional uterine bleeding	30%
3	Adenomyosis	6%
2	Endometriosis	4%
1	Post menopausal bleeding	2%
2	Cervical dysplasia	4%

Table 1B
Indications for Abdominal Hysterectomy
25 cases - Jan.'92 - Nov. '93

12	Leiomyoma	48%
5	Menorrhagia/dysfunctional uterine bleeding	20%
2	Adenomyosis	8%
2	Ovarian tumor	8%
1	Severe cervical dysplasia	4%
1	insitu CA of cervix	4%
1	Endometrial CA	4%
1	Adenomatous hyperplasia of endometrium	4%

Table 2A
Comparing Techniques - Abdominal Hysterectomy

average blood loss	300cc
average O.R. time	1 hr. 18 min.
blood transfusion	2 patients , 2 units ea
complications	nil
average length of stay	6 days

Table 2B
Comparing Techniques - Laparoscopic Assisted Vaginal Hysterectomy

	Stapling & Cautery	Bipolar Cautery	Laparotomy Converted
No. of Cases	44 cases	1 case	5 cases
O.R. time	1 hr. 52 min	4 hr. 15min (lst case)	2 hr. 10 min
est. blood loss	175 mls	550 mls	250 mls
transfusions	1-2 units	1-2 units	0
hospital stay	3 days	7 days	6 days

Table 3

Complictions Associated with LAVH			
Technique	**Ptn.**	**%**	**Specific Complication**
Cautery	1	2	Post-op bleeding requiring laparotomy - cuff cellulitis
Automatic Stapling	2	4	Bladder perforation requiring laparotomy
Device & Cautery	2	4	Rectus hematoma
Converted failed	5	10	Bladder adhesions, large fibroids, obesity

Table 4
Results of Phone Survey

		LAVH	AbHyst
A	Return to normal activity	3-4 wks	5-6 wks
B	Return to work	5-6 wks	8-9 wks
C	Return to sexual activity	4 wks	7-8 wks

tate 500mls with 250mg ampicillin for abdominal instillation at the end of the procedure, xylocaine 1% with epinephrine 1:100,000 20 mls used in the vaginal area.

The sutures used:
Laparoscopic puncture sites
O Dexon TT3 deep for fascia
2-0 plain CE-6 for skin
Vaginal:
2 - 0 chromic holding ties
1 T-12 Dexon x 5 - (used for remaining pedicles that are not stapled)
0 T-12 Dexon x 2

LAVH: The Procedure

The patient is anaesthetized and placed in the low dorsolithotomy position. A bean bag in used to support the arms at the sides, and folded around the shoulders to keep the patient from sliding down the table when placed in the trendelenburg position. Special attention is paid to padding the elbows, fingers and knees. The perineum, abdomen and vagina are prepped with povidone solution. The patient is draped with sterile, disposable drapes. The instrument tables, video screens, cautery and hydrodissector are brought into position and connected.

The hulka or valtchev tenaculum is placed on the cervix to antivert the uterus. A # 14 foley catheter is inserted and attached to a sterile foley bag.

A verres needle is inserted into the umbilicus and the abdomen in insufflated with $C0_2$. A # 12 mm trocar with a surgigrip is inserted after removing the verres needle and placement is checked with the telescope. A surveillance is done of the abdomen for adhesions; the uterus, ovaries, tubes, and cul de sac are examined. If the gynecologists decide to go ahead with the procedure laparoscopically, trocar placement is continued. A 5mm trocar with a surgigrip is placed in the suprapubic area. Two 12 mm trocars with surgigrips are placed bilaterally about 3" from the umbilicus.

The hysterectomy is begun by ligating the infundibular pelvic ligaments and round ligaments. (The ligation is done using an endo GIA stapling device from Autosuture.) The endo gauge is used to determine the appropriate reloading unit. The instrument is opened and placed on the ligament and fired. An inspection is done of the cut and stapled edges for hemostasis. If everything is satisfactory, the same procedure is performed on the opposite side.

The next step is to take down the bladder flap. The peritoneum is lifted at the vesico-uterine fold. The dissection is done with cherry dissectors (which are much like a long Q-tip) and/or a hydrodissection pump. The bladder is dissected off the lower uterine segment and cervix. Upon completion of the bladder flap, both ureters are identified. If the ovaries are to be removed, they are ligated next. The uterine pedicles are removed using a GIA stapler. The broad ligaments and the uterosacral ligaments are ligated with bipolar cautery.

In most cases the endoscopic portion of the surgery is completed after ligation and division of the uterine arteries. The level of the bladder and vagina prevents further downward application of staples. In some cases, however, if the bladder is adequately dissected and displaced, the upper aspect of the cardinal ligaments may be staple ligated using the same methods discussed earlier.

It is extremely important to visualize and avoid the ureter during this step. The vagina is not entered during the laparoscopic portion of the operation, although this can be accomplished. When the endoscopic dissection is complete, the vaginal approach is begun.

The hulka or valtchev tenaculum is removed. The $C0_2$ is turned off. The video equipment is turned off, and the room and operating lights are turned on. A suitable tenaculum is applied to the cervix and a standard vaginal hysterectomy is begun. After entering the posterior cul de sac, the anterior vaginal mucosa is dissected upwards. Usually the anterior cul de sac is easily entered through thin areolar tissue. The uterus is removed and the last pedicles are tied. The vaginal cuff is closed, the peritoneum and vagina are closed in one layer.

The room and operating lights are again turned off, and the video equipment is turned on. The pneumoperitoneum is recreated. The peritoneal cavity is irrigated with a solution of Ringers Lactate 500 ml/ with 250 mg of ampicillin 200-300 mls. Inspection for hemostasis is done with the laparoscope. If all is satisfactory, some of the $C0_2$ gas is removed from the abdomen. The equipment is removed, the incisions are closed with subcuticular stitches. Dressings and a peri-pad are applied, the foley is taped and the patient is transferred to the Recovery Room.

Early Clinical Experience

Tables 2A and 2B compare O.R. time, blood loss, transfusions and length of hospital stay. Patients who have an LAVH using cautery/stapling are discharged within 3 days. The average operating time is 1 hour and 52 mins versus 1 hour and 18 minutes for the abdominal approach. As the surgical team becomes more skilled, this time may be less. The case using Bipolar cautery was the first case done at the Victoria General Hospital, hence the lengthy O.R. time.

Table 3 shows the complications associated with LAVH when the first cases were reviewed. The first case developed postop bleeding at the base of the bladder which required a laparotomy, the cuff cellulitis was treated with antibiotics and the patient required two units of packed cells. There were two cases of bladder perforation, one required a mini-laparotomy and the other was sutured laparoscopically. There were two case of rectus hematoma. There were five cases that had to be converted to abdominal hysterectomy due to bladder adhesions, a large fibroid and obesity.

As part of the review, a telephone survey was done by the audit personnel at VGH. The patients were asked the following questions:

1. How did you feel about the procedure?
2. When did you start normal activities?
3. When did you return to work?
4. When did you resume sexual activity?

Table 4 shows the results of this phone survey. Patient satisfaction with the procedure is high, as reflected by their comments:

"Recovery was fast and almost painless."
"I felt it was very successful, felt good after the operation. I could have gone home the next day."
"I would definitely recommend it."
"Great! I wouldn't have it any other way."
"I couldn't believe it would be so easy."
"Hardly any pain."

The Benefits of LAVH

There are several benefits to this procedure:

1. Less invasive procedure - 3-4 puncture sites.
2. Shorter hospital stay. Three days vs. six for abdominal hysterectomy.
3. Fast recovery.
4. Less painful - needing less narcotics.
5. Early return to normal activity and work.
6. System wide cost benefits.

Restrictions of Laparoscopic Surgery

With laparoscopic surgery there are some restrictions.

1. Three dimensional vision is impossible, (unless you have a 3-dimentional camera) and the team has to get used to working with cameras.
2. The actual organ size is distorted.
3. Operation mobility is restricted - once the trocars are placed, you have to work with the instrument in those positions.
4. Increased skills are required by the surgeons and the O.R. staff.

Table 5

Comparison of Coast and Hospital Stay

	LAVH with Stapling	LAVH with Bipolar cautery	Abdominal Hyst	Vaginal Hyst without repair
average days in hospital	3	3	6	5
av. VGH cost (per day $466 + Taxes	$1398	$1398	$2796	$2330
OR Costs	$1100	$284	$284	$284
Anaesthesia and surgeon cost	same	same	same	same
TOTAL:	$2498	$1682	$3070	$2614

These feet have just put in ten miles taking blood, giving needles, calming an emergency patient, and filling in for another nurse who called in sick.

Logiparin™ (Tinzaparin Sodium Injection) is a new low molecular weight heparin (LMWH) for DVT prophylaxis that only has to be administered once daily.[1] As well, Logiparin™ requires no PT or APTT monitoring.[1] This can make a significant difference to hospital staff who are trying to keep up with today's challenges of providing optimal patient care with fewer resources.

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Most common side effects of Logiparin™ (>1/100) include hematoma at injection site (uncomplicated) and transient increase in aminotransferase levels (not clinically relevant).

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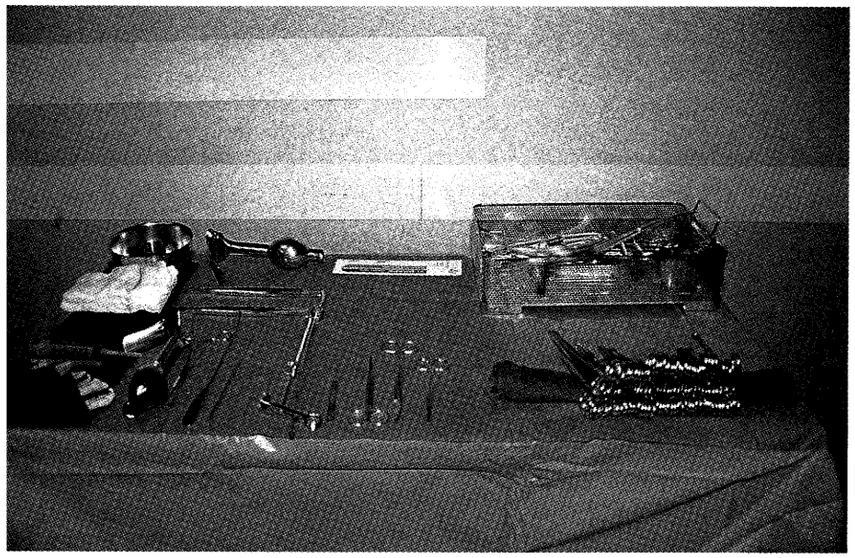
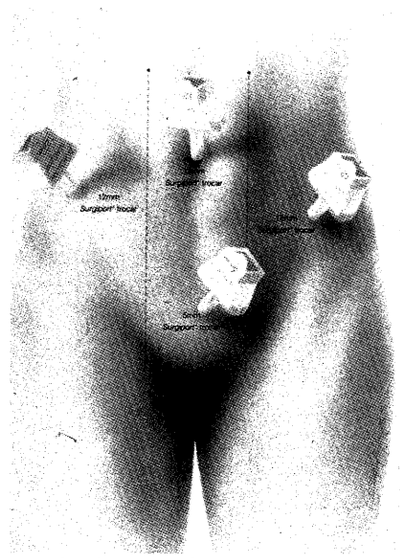
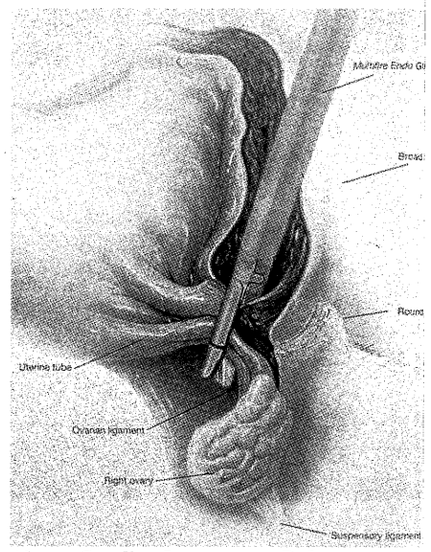


***Photo Above:** Vaginal Instruments on a low table.*

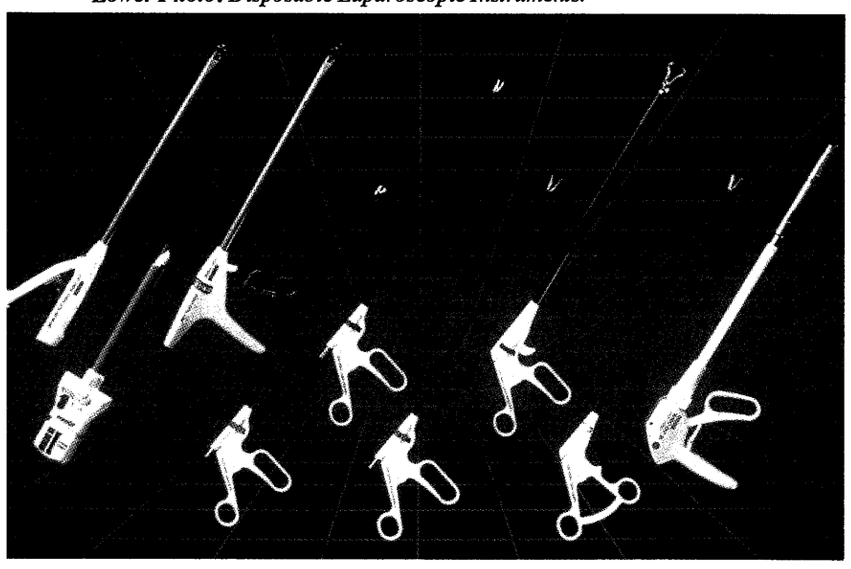


Sample of Trocar Placement

***Photo Above:** Laparoscopic Instruments on a high straddle table*
***Lower Photo:** Disposable Laparoscopic Instruments.*



***Above:** Stapling Instrument . **Below:** Hydrodissection Pump Accessories*



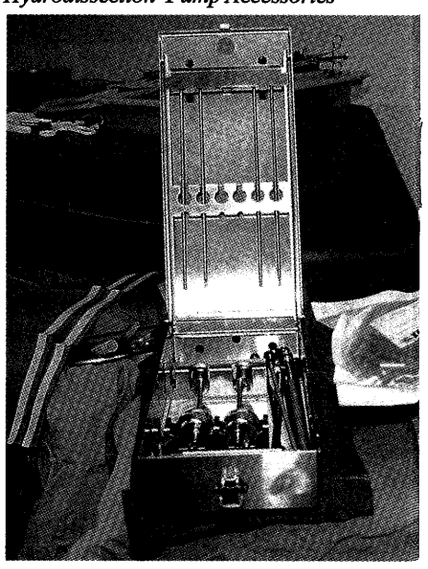


Table 5 is a comparison of costs between conventional hysterectomies and laparoscopic assisted hysterectomies. The average hospital cost at the VGH per day is $466 plus GST and PST. Anaesthesia and surgeon costs remain the same for each procedure. Although the O.R. cost for LAVH is much more due to the stapling devices, the overall savings come from the decreased length of stay in hospital. LAVH with combination stapling and cautery seems to be the technique of choice among our gynecologists.

Postoperative Care

The postoperative care for patients who have had an LAVH is somewhat different. As in any laparoscopic surgery, bowel peristalsis is only minimally affected. There is little to no postoperative gas pain, and patients ambulate sooner, which minimizes complications.

Patients who have had an LAVH are put on liquids to diet as tolerated immediately postoperative as you don't have the concerns with Ileus that you have with the abdominal technique. The foley catheter is removed approximately 4-6 hours postoperatively; with the abdominal technique the foley usually remains in for a day or two. Pain is managed for both techniques by PCA (Patient Controlled Analgesia), but requirements for analgesia following LAVH are much less. Patients having abdominal hysterectomy require more nursing care and their hospital stay and recovery are longer. When patients are discharged following LAVH, they are given a postoperative instruction sheet with the following guidelines.

Pain

If you are given a prescription for pain - take medication as instructed by pharmacists. If you are not given a prescription, take 1-2 Tylenol every 4 hours when you have discomfort.

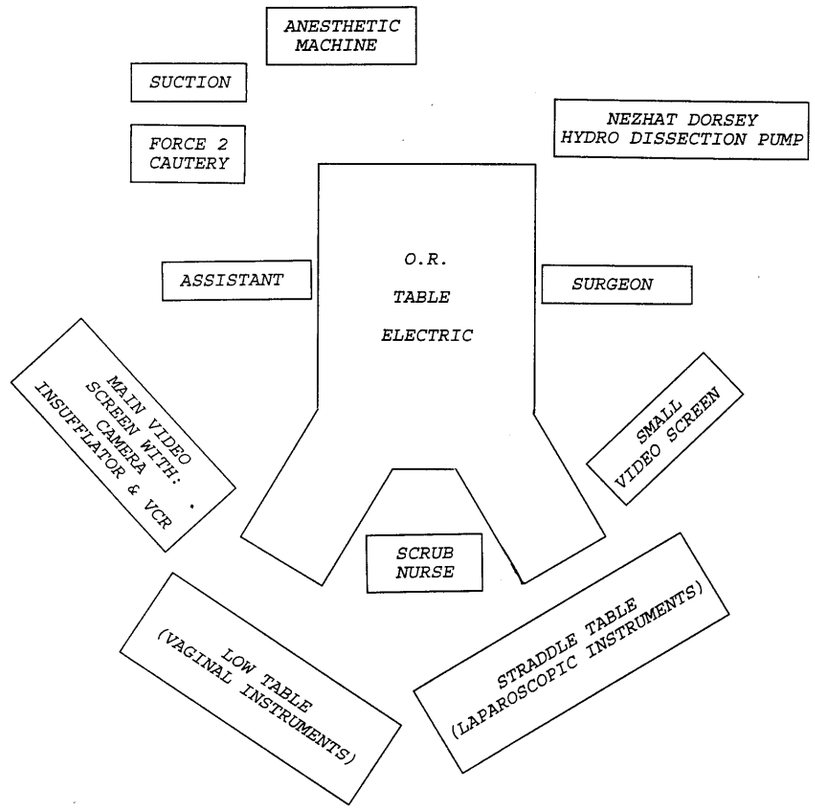
Activity

You may tire quickly for a few weeks following surgery. Your energy level will return as you recover. For 2-3 weeks avoid heavy lifting, and vigorous activities, i.e. vacuuming, laundry, shopping. Exercise such as going for walks and climbing short flights of stairs are encouraged. You may return to work 3 weeks following surgery.

Sexual Relations

You may usually resume sexual relations 4-6 weeks following your surgery.

Diagram 1 - Victoria General Hospital Theatre Set-Up - LAVH



Bathing and Pericare

It is preferable to take a shower rather than a tub bath for two weeks following surgery. Patient continues pericare at home with warm water and a squirt bottle, and instructed not to douche or use tampons. The patient is also informed that vaginal discharge will gradually decrease, and that since the uterus has been removed, she will no longer have a period, and will no longer have to take birth control precautions.

Incisions/Dressings

You will either have paper tapes or bandaids over your abdominal incisions. Remove the bandaids before you shower and replace them with clean ones after you shower. Wash gently around the paper tapes, being careful not to rub. The paper tapes will dry on their own

Diet

You may resume your normal diet once you are at home. You can help the healing process by eating foods which are high in protein, such as lean meat, eggs, fish, poultry, beans, peas, and milk. To help prevent constipation, eat foods which are high in fiber such as bran, whole grains, fresh fruits, and vegetables. Drink at least 4 glasses of water every day.

Additional Instructions

Notify your doctor if you have any of the following:

- vaginal discharge becomes foul smelling
- vaginal bleeding increases in amount or you start to pass clots
- a fever 38°C or chills
- internal lower abdominal pain
- symptoms of bladder infection: a feeling of an urgent need to empty your bladder, having to empty your bladder frequently, pain when you empty your bladder

Conclusion

The laparoscopic approach provides patients with a more viable alternative to abdominal hysterectomy. Their hospital stay is shorter, recovery is faster, and they are able to return to their normal activities and work sooner.

As the potential of operative endoscopy is realized, techniques and instrumentation will change to meet with our needs. A highly skilled and knowledgeable surgical team that keeps in touch with changing technologies will improve the quality of care for patients, and in the long run provide cost savings to the health care system. ■

See the Special Section on
Flexible Endoscopes - p.35

Endoscopy Instruments

Their Role in Delivering Optimal Patient Care

By Jane Shrubb, R.N.

It is imperative to have available proper, functioning, sterile instruments for surgical procedures to decrease the opportunity for intra and post operative patient complications:

- **Maintain patient safety,**
- **Decrease time patient is under anaesthesia, and**
- **Achieve a zero infection rate.**

Perioperative nurses should know as much as possible about surgical instruments and equipment so as to identify the preparation requirements and to analyze the impact of the related work load and activities. Consider the following guidelines to greater efficiency.

- Organize preparation requirements to allow more flexibility in scheduling surgical procedures.
- Address special individual patient care needs.
- Be aware of compatible options and substitutes with instruments to decrease instrument down time.
- Be able to trouble shoot incidents as they occur.
- Assess what are reasonable inventory levels of instruments and equipment to accomplish the institutions's case volume.
- Decrease operational expenses and prolong utilization (life span) of the instruments.
- Establish effective and efficient instrument care and maintenance routines and processes.
- Proactively schedule periodic preventative maintenance programs to decrease repair cost and instrument down time.

Become familiar with the recommended practices, patient and technical standards, regulations and guidelines and incorporate them into the various operational activities (these aspects should also be reflected in the information distributed by the manufacturer/supplier). Standards and guidelines should include:

- Perioperative Patient Care Standards
- Universal Precautions
- Sterilization Standards
- Aeration Standards and Guidelines
- Recommended Practices for Disinfection
- Endoscopes - Recommended Practices (Rigid and Flexible)
- Electro-Surgical - Recommended Practices
- Employee Health and Safey Standards

Keep abreast and informed on clinical and operational issues concerning instrumentation and compare present practices and activities for consistency.

Inservice:

Inservice should include auxiliary and resource staff as well as the staff directly involved.

Network:

Network within the hospital, with support services and related departments to ensure consistent patient care throughout the hospital, i.e. Surgical Day Care, Labor and Delivery, Endoscopy Clinic, Materials Management Supply and Processing Department, Respiratory and Biomedical Resource Department.

Network outside the hospital with perioperative nursing peers and other professionals and technicians in related health care specialties, i.e. Local, Provincial, and National (O.R. /SPD) Associations. Attend conferences/seminars whenever possible.

Jane Shrubb, R.N., is the Senior Partner with Shrubb Associates, an OR, Endoscopy Central Supply and Processing Consulting firm in Markham, Ontario. She was formerly Nurse Manager, Operating Room Department, Toronto Hospital, Toronto.

Subscribe to Educational Publications:

Subscribe to a variety of related professional journals, for example, *the Canadian Operating Room Nurses Journal, the American Operating Room Nurses Journal , O.R. Manager , O.R. Reports*, ECRI Bulletins, Medical Alert Resources, Biomedical Journals, and the *Journal of Health Care Materiel Management.*, and the Infection Control Journal (Canadian and American).

Request Information:

Obtain written detailed information from the supplier or manufacturer. Instrumentation has become a maze of technical, complex, systems and devices, which can cause employees additional anxiety and frustration.

Request simple, concise, easy to follow information and instructions covering:

- care and maintenance manuals, guidelines,
- efficacy and compatibility studies.
- instructional videos for additional inservice, orientation, and refresher sessions.
- quick reference instruction sheets and posters which serve as "On the spot" reminders for the staff.
- additional information such as instructional tools, posters, soft ware information, guest speakers for meetings.

Investigate and evaluate the supplier or manufacturer as well as the product. Review their customer service program, repair and turn - around time, loaner capability, and any other additional services.

Summary

Information about instruments is pertinent to patient care.

1. Always check that the information given is validated with references and bibliography.
2. Use the information as reference when reviewing and revising policies, procedures, and processes.

Any change in practice should be done in collaboration with representation from end users, auxiliary staff handling the equipment and including hospital resource personnel, i.e. infection control, risk management, biomedical engineering, and materiel's management.

Endoscopic Instruments

(Quick Reference Chart)

The Purpose, Function, Features, Benefits and Care and Maintenance of Surgical Instruments:

Veress Needle:

- Penetrates tissue to create pneumoperitoneum.
- Keep stylet and trocar together as they often are a matched set.
- Ensure tip is smooth and sharp.
- Sterilize disassembled with valve in open position.

Trocar and Cannula:

- Establishes and maintains channels to perform surgery - 6mm, 9, 11, 12, 15 and 22mm diameters are available.
- Before surgery **always confirm compatibility** (sizes of cannulas and instruments) **if integrating different manufacturers of instruments and disposable instrument products .**
- Cannula sleeves are mat or / anodized finish, with or with out external spiral thread and the end may be oblique or straight.
- Cannula may be rigid, FLEXIBLE, reusable or disposable (thoracic surgery).
- Trocar tips may be conical, pyramidal or blunt
- Valve mechanism on cannula may be trumpet / automatic (trap door) / or multi-function.
- The " Hasson" or open style trocar cannula is inserted through a small stab wound and fixed to the abdomen with sutures to stabilize the working channel.
- Disassemble all components for processing and sterilization.
- Use sterilization key to ensure automatic valve (trap door assembly) remains open during sterilization.

Graspers/Forceps:

- Long shafted instruments with different jaw/tip configurations to perform surgery, diameter of instrument shaft may be 3, 5 or 10mm.
- Length can vary as much as 10mm depending on single or multiple puncture procedure.
- Handle configurations vary from ratchet, non ratchet, displaceable ratchet, spring loaded.
- To perform surgery Instruments jaws may be traumatic, atraumatic, and/or rotatable, for dissection, fixation or retraction.
- Instrument exterior maybe insulated for electro-surgical application. **Insulation integrity is very important - thoroughly inspect each instrument.**

First generation of instruments:

• most of them can not be disassembled although some instrument handles can be disassembled to expose the instrument shaft end to allow flushing with syringe bulb, cleaning pistol or mechanical device.

Second generation of instruments:

• are designed with flushing ports (standard luer lock port with a cap). This makes it easier to flush the shaft of the instrument.

• The cleaning port caps are to remain "off" during sterilization.

Third generation of instruments:

(hybrid and semi - disposable)

• are designed to be totally disassembled for easy processing, and to allow sterilent to come in contact with all surfaces and lumens.

Interchangeable options with take apart type instruments increases flexibility, and permits instruments to be reassembled into different jaw configurations via changing the insert. This will prevent instrument down time and decrease repair and inventory costs. These instruments are commonly called TAKE APART ™ (semi disposable/hybrid).

Scissors:

• Designed to dissect tissue or cut suture.

• Blade styles available are micro, straight, curved (metz), hook, blade edges may be serrated.

• TAKE APART ™ models are available with or without rotateable jaw and interchangeable blade inserts.

• Options

- exterior may be insulated, or non insulated,
- monopolar and bipolar electro-surgical application models are available.

• Blade sharpness can be tested by cutting a latex glove.

• Scissors must be sharpened by qualified repair technicians.

Converter/Reducer:

- Reduces 10mm. cannula port diameter to 5mm.
- All parts of the instrument must be disassembled for cleaning and processing.
- Washers or caps deteriorate (soften) with repeated processing.
- Inspect frequently and replace when it becomes supple.

Dilation Set:

- Series of cannula used to increase 5mm. cannula port to 10 mm.

Telescope:

• Used to visualize operative site

• Field of view ranges from 0^0, 15^0, 30^0, 70^0, 120^0

• Sterilize via steam, ETO, paracetic acid, plasma

• Some telescopes have:

- model numbers that identify method of sterilization
- autoclave parameters inscribed on the eye piece
- detachable eye piece to adapt cylindrical (smaller) camera heads
- serial numbers to facilitate tracking repair costs, and the life span of the telescope for budget purposes

• Maintain lens clarity by wiping lenses with alcohol after cleaning, and periodically polish Light Post with instrument (silver) polish.

• **During surgery prevent fogging by:**

- using single dose anti fog solution
- using the "visceral wipe" technique
- warming the telescope in a container (lined with a gauze at the bottom) of warm water **not hot.**

Note: temperature of very hot water can cause fine cracks in the lens.

• Change $C0_2$ (cool) insufflation port, to a port other than the one on the telescope cannula.

• Always check telescope light post adaptability/compatibility to light cable

Ideally, a steam autoclavable telescope should be sterilized in its own container in a gravity displacement steam sterilization cycle.

If high level disinfection is used to reprocess the telescope - use a solution with a balanced pH and a low level surfactant A high surfactant level causes build up of film on telescope and lenses.

Two separate and thorough rinses are recommended to prevent film build up and to ensure no disinfection solution remains.

Dissection Electrode Cannula:

• Is a combination cauterization and dissection instrument.

• Tip configurations may be L, J, U hook, or spatula,

• Valve mechanism on some models allows the release of cauterization plume.

• Visually inspect integrity of the insulation,and that the tip is secure and properly aligned.

• Brush lumens with appropriate size brush.

• Sterilize via steam, ETO, paracetic acid, plasma

Suction/Irrigator:

• Control mechanism on this instrument is a trumpet valve or a thumb lever mechanism.

• Disassemble for sterilization.

Irrigation fluid may be attached via I.V. tubing to pressurized bag or an automatic infusion pump (infusion pressure should be higher than the intra abdominal pressure).

Needle Drivers :

•For intracorporeal suturing (suturing inside the abdomen) needle drivers are used in pairs, one to hold the suture needle and one to manipulate the suture tail.

•Various handle configurations are available to facilitate certain suturing techniques (surgeons' preference).

Knot Pusher:

•Used in extra corporeal suturing where suture knots are created outside the abdomen and then delivered into the abdominal cavity.

• It is a long metal probe type instrument with slotted tip or small slotted ring tip.

Probes :

•A long smooth instruments used to inspect and probe anatomy.

These are the common, basic, minimal access surgery instruments. There are many other instruments available that are particular to certain surgical techniques and procedures.

Endoscopic Accessories

Electro-surgical Cable:

- Monopolar, and or bipolar frequency cables are available.
- Check cable compatibility, with instrument and electro-surgical unit inlet.
- Sterilize via steam, (using dry cycle), ETO, or plasma.

Light Cable:

- Common Fibre diameter options are 3.5 or 5mm.
- Cable ends must be compatible with telescope and light source.
- Outer sheath should be durable to minimize sharp bending that will cause fibres to crack and decrease light transmission.
- Always wrap separately to prevent "heat transference".

In the construction of some light cables there is a space between the fibre bundle and the outer sheath/cladding. Always follow manufacturer's recommended sterilization instructions, as this space may be influenced by dramatic vacuum steam sterilization cycles, and cause the sheath to deteriorate quickly.

Insufflation Hose

• Tubing may be of silicone, rubber, latex, or disposable plastic.

•If the tubing is made in house; the fitting is a standard luer lock style connector. **Note: the internal diameter of the tubing must be compatible with the electronic insufflation unit.**

Small Parts Container:

•A small autoclavable perforated container for instrument parts.

• Confining all the small bits and pieces (washers, caps and special fittings, etc.) when instruments are disassembled will prevent loss in cleaning and processing.

Electronics

Camera:

• One, three, and half chip technology affect the weight and size of the camera head.

• Drape with disposable drape.

• Keep the camera cable up off the floor.
Note:
Cable and camera head require careful handling.

Monitor:
• Allows visualization of the procedure (in some situations two units are used).

Insufflator:
• Supplies $C0_2$ to create pneumo in cavity for visualization.

To prevent the possibility of any foreign particles from entering the abdomen, a filter can be applied to the out flow port of the unit- ensure model of filter is compatible with insufflation unit flow rate (i.e. Mille pore pore filter).

Light Source:
•Provides and regulates light intensity for visualization in the cavity i.e. xenon (type).
• Always keep extra bulb on hand.

Utility Cart:
• Align the electronic components to facilitate easy monitoring of the control panels and to connect cables: monitor on the top followed by light source and insufflator on one shelf (if possible), camera processor and VCR recorder.
• Utilize a closed cabinet to store and transport video components.
• Cabinet features to consider:
- recessed area to hold two Co_2 tanks
- opening at the back to access electronics
- adequate ventilation
- locks for security
- recessed transport handles
large, smooth rolling, locking wheels

Cleaning Accessories

Mechanical Cleaning Tools

Water pistol - pressurized water pistol with adapters to flush and rinse instruments.

Flushing units - pressurized flushing units designed to deliver cleaning agents and rinse water through instrument lumens channels and shafts.

"Clean Set", "Endo Flush", "Endo-Clean" and "Medisafe" (a pressurized flushing and ultrasonic combined unit) are a sample of some brand name products appropriate for such cleaning.

• Sonic Cleaners:
Investigate cleaning protocols and the necessity of using the unit as part of each cleaning routine.

•Air Pistol:
Can be attached to regulator on a compressed air tank, or inline air hose to facilitate drying instruments, lumens and channels prior to sterilization, especially before:
- ETO to prevent formation of toxic residuals.
- Plasma sterilization process as extra moisture may disrupt cycle parameters and cause unit to abort cycle process.

• Cleaning Brushes:
Select appropriate brush length and diameter. **Ensure tips are smooth** to prevent scratching internal instrument surfaces.

Care & Maintenance Tools

• Spare Parts Container:
Keep a small inventory of spare parts, and appropriately label the compartments with the catalogue number and required quota to prevent instrument downtime and simplify reordering.

• Instrument Containers:
Utilize perforated, rigid containers of plastic or stainless steel .

• Protection Materials:
- Autoclavable and reusable materials are available for example: open cell type sponge i.e. "ReticuCel".
- Instrument tip protectors provide added protection for delicate instruments and instrument tips.
- Silicone peg mats are available to offer additional cushioning to the bottom of rigid instrument containers and work surfaces in the processing department.

• Repair Tags:
Autoclavable, plastic, with easy to remove lock clasp can be used to indicate repair required. Colour coding can be used to identify repair needs i.e. red to indicate rush repair, yellow to indicate sharpening required etc. A stainless steel safety pin is another suggestion to mark instruments for repair.

• Bar Coding Labels:
- Labels can be affixed to serialize many instruments. This is an excellent way to monitor repair data for budget purposes.
- Many label configurations are available which are very heat and chemical resistant.

• Inline Water Filtering
Hardness of water is of **prime importance** in processing and sterilization. There are many undesirable side effects caused by the combination of chemicals in water, cleaning solutions and the different instrument metals, as well as affecting the quality of steam. Adverse effects include decrease in sharpness of instrument cutting edges (scissors, curettes), film build up in crevices and freezing of the jaw mechanisms of instruments, rust, corrosion, and general discoloration of instruments.

Flexible Endoscopes

Flexible endoscopes are technical, delicate pieces of equipment. There are many variables to consider when addressing additional expenses that may be incurred when using this equipment:
- the number of different departments using the same equipment.
- number of flexible scopes in use and the age of the scope.
- activity level, number of cases, both elective and emergency.
- number of attending staff Surgeons and Medical Physicians, Fellows and/or Residents using the equipment.
- hospital and departmental infection control program.
- the number and levels of personnel involved with the handing the equipment, i.e. doctors, nurses, technicians, and auxiliary staff.
- care and maintenance protocols.
- service and maintenance programs (including warranty and loaner program).

Review the following operational, physical, and procedural, aspects. Consideration of these details should assist and provide additional insight in projecting an appropriate budget and also highlight mechanisms and activity to decrease incidence of costly repairs. Also include in the review the most current Recommended Practices/Standards on flexible endoscopy equipment. These standards outline in detail the many aspects involved with infection control, care and maintenance.

Operational and Physical Guidelines

Handling and Storage
• Always carefully handle flexible endoscopes, coiling the equipment gently in large circular fashion.
• Provide proper protection from accidental impact:
- when not in use, endoscopes should be stored in a rigid casing or cabinet, each endoscope hanging in an appropriate hanging bracket with a support bracket for the umbilical end.
- install hanging brackets at a reasonable height.
- hang scope in a straight alignment (line the wall behind the scopes with a cushioning material, paying particular attention to the area directly behind the distal tip portion of the scope).
- use rigid containers designed for flexible scopes for sterilization process (inexpensive products are available).
- do not store endoscope in its case.
- use a utility case cart specifically designed for endoscope procedures.
- transport the flexible scope for repair in its case.

Neoprene
Neoprene is the material used as the outer covering of the distal tip. This material is very soft and supple to facilitate the best angulation possible. This also makes it very susceptible to punctures and cuts. Pay particular attention not to drag or knock the tip of the scope over any rough, uneven, or metal surfaces.

Care and Maintenance:

A separate adequate work area should be provided for proper cleaning, and processing.
Infection Control
- follow the company's recommended practices for cleaning
- follow the hospital's recommendation for type of detergent (i.e. enzymatic), disinfection solu tion (note concentration percentages), and or sterilization process (ETO). Selection of products and practices must be done in consultation with the manufacturer.

Establish Written/Illustrated Cleaning Protocols :

Use a manual and/or automatic cleaning process.

Written and illustrated information is available from the manufacturer. Several automated cleaning units are available. Investigate the manufacturer's literature which should describe an efficient, consistent cleaning process, which may also decrease the auxiliary staff work load in the department.

Accessories:

To facilitate delicate cleaning, incorporate the use of an ultrasonic cleaner for the biopsy and forcep accessories.

To prevent any tear type incidence inspect the jaw alignment of the accessories under a magnifying glass.

Establish Inservice Programs:

The Inservice program should be conducted on a regular basis and reflect needs of the personnel involved.

Establish and Implement a Well Defined Preventative Maintenance Program:

Pre-book regularly scheduled dates for preventative maintenance (depending on unit activity) to be done in the off hours, so as not to interrupt the elective booking schedule.

Each P.M. check provides documentation (with dates), current description of the status of each scope, and draws attention to potential problems (if any).

Monitoring Protocols:

Gather and analyze information on the unit activities and work load.

Implement an electronic or manual log book, to generate data for analysis, comparison, and budget purposes (i.e. forecasting expenses).

In the log book, consider recording: the patient, diagnosis, procedure time and date, physician, if scheduled case or emergency case, and the staff assisting with the case and cleaning. This monitoring will create an audit trail to help define scheduling, activity, protocol changes and/or potential problems.

Since this equipment has many technical aspects concerning, handling, care and maintenance etc., having a designated staff assigned to work with the equipment in the various departments on a regular basis is a definite advantage.

Identify and assess what are the emergency or urgent procedures, done in the off hours or on weekends, and in what department; especially, if a call back system is necessary to provide assistance. This will help define which cases can be juggled, and or rescheduled (to do when staff, familiar with the equipment are available, (i.e. first thing Monday morning). It will also help define additional costs.

Procedural Aspects:

The flexible insertion tube of the scope is the most delicate part of the instrument and repeated encounters of undo pressures, or resistance when introducing the scope, can cause problems in the angulation assembly over a short period of time. This is expensive to repair. The repair technicians, define this as 'pressure kink' (colonoscope, gastroscope), 'bite compression' (bronchoscope) damage.

Patient related issues can contribute additional strain and pressure on the insertion tube at the time of insertion: i.e. their anxiety level and lack of relaxation, obesity.

Review the preparation protocol for the patients with the attending staff:

- review (and or standardized) the drugs administered preoperatively , i.e. bowel preparation and medication, muscle relaxant as well as sedative. (Buscopan and Versed is a routine combination of medications for colonoscopy used in many centers.)
- ensure a digital dilataffon of the anus before insertion of the scope, this decreases the opportunity to cause " undo pressure and resistance," on the scope.
- ensure the use of a bite block, for G.I. and Thoracic endoscopy.
- review injection of varices procedure, especially with new residents (so they become familiar with handling the injection needle).
- do not resterilize disposable injection needles.

Summary

The issue of "how to address flexible endoscope repair", and the incurred expenses is not new, 'NEWS.' Each hospital has its own unique situation and its own needs. Direct comparison of hospital situations point for point, or forecasting endoscope repair and additional expenses is difficult.

A reasonable long term consideration might be to centralize the equipment: in a self contained "Scope Store," which issues, receives, and reprocesses the equipment per requisition per discipline per staff. The store may also be incorporated into the Supply Processing Department, Endoscopy unit, or Respiratory Department.

This concept, or a variation of it, incorporated into the OR department has the potential to be financially beneficial. It would promote consolidating and standardizing equipment and cost effectively reduce operational expenses and provided consistency in patient care. ■

Coaching
As a Framework for Developing Staff in the Operating Room

By Jodi Cole, R, BA

Teamwork is essential to positive patient outcomes in the Operating Room. O.R. nurses function as integral members of a highly sophisticated team. New technology, equipment and procedures are regularly introduced, and O.R. nurses must continuously upgrade their knowledge and skills to accommodate these developments. Coaching is a technique that can be used to facilitate this process. It offers a framework for developing individuals while providing a mechanism for continuous performance feedback (Haas, 1992).

In support of this argument, this article will define coaching and describe the coaching process as it is applied in the workplace and the operating room. It will look at the characteristics of good coaches and the skills needed to be successful.

What Exactly is Coaching?

Coaching has been defined as an ongoing face-to-face interaction between learner and coach. It is a process of influencing behaviour that assists employees in achieving an increase in job knowledge that will help them to execute their job responsibilities more efficiently and with greater job satisfaction. It provides individuals with opportunities for personal and professional growth while developing positive working relationships. Coaching responds to an identified need or situation and may be formal or spontaneous (Haas, 1992).

Coaching is a cyclic process of assessing, planning, implementing and evaluating that recognizes that:

> performance appraisals are no substitute for day-to-day skills of establishing performance expectations; taking corrective actions; recognizing positive results; establishing and following action plans and giving frequent constructive feedback. (Clemmer and McNeil,1988).

It is a careful balance between the result-driven and the self-esteem humanistic approaches to human resource management. Good behaviour is supported and employees are encouraged to aspire to their best efforts (Clemmer and McNeil, 1988).

Coaching is not looking for flaws, criticizing or trying to win points at the expense of others. The learners and coaches are on the same team, sharing experiences and helping the learners to overcome obstacles that might prevent them from accomplishing their goals and objectives. When these goals and objectives are achieved, the whole team is seen to have won.

Coaching can be an effective way of showing a new person the ropes while advising and teaching. It is somewhere between preceptoring and mentoring, and involves building a one-to-one trusting relation-

Abstract

This paper looks at coaching as a framework for facilitating the development of staff in the Operating Room. It defines coaching as an ongoing, face-to-face interaction between the learner and coach that supports and encourages employees to aspire to their best efforts. It stresses that coaches are not born but trained in life skills that they practice regularly.

Author

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ship that is concerned with the development of individual and their ability to reach their full potential (Haas, 1992).

What Does It Take To Be a Coach?

Coaches are not born - they are trained in life skills that they practice regularly. To be effective, they must be credible. They often excel at their work; are confident in their own performance and understand the job thoroughly. They set high standards for themselves and their fellow workers. In short, they look and act the part, and are comfortable performing the task they are coaching (Perrone, 1992).

At the same time, coaches must be patient individuals who understand that not all team members value the same outcomes as they themselves do. They expect and tolerate mistakes, recognizing that it is not possible to win each and every time, but that the important thing is that the learners are giving their best and will learn from their mistakes (Haas, 1992).

Good coaches will let learners stumble but not flounder. They are supportive and able to offer advice and guidance in a timely fashion. They want the learners to succeed because they themselves are committed and concerned team-players who treat all staff equitably (Perrone, 1991). Their attention is focused on individuals and is not limited to just the very high or the very low achievers. They do not bully or publicly ridicule and embarrass learners into bettering their work. They coach by reason rather than rules, and see themselves as people movers rather than paper pushers (Clemmer and McNeil,1988).

Good coaches are flexible. They understand that there is often more than one way of doing the same thing. Being flexible encourages and nurtures creativity in their students. They do not dictate, and are able to use a blend of strategies to achieve their objectives. They respect the learner's opinion and are open-minded to suggestions and ideas. They are enthusiastic and empathetic, and are interested in the development of the knowledge and skills of the learner as an individual, rather than simply the performance of an employee (Perrone, 1992).

Coaches respect the dignity of learners and their right to personal privacy on and off the job. They do not underestimate the average individual's sense of fair play and their need to be treated with honesty and respect. They understand that employees who are not appreciated will not produce what they are capable of. Good coaches realize that they must earn participation, not command it (Clemmer and McNeil, 1988).

What Skills Does a Good Coach Need?

Good coaches are keen observers, skilled at interpreting verbal and non-verbal behaviours while monitoring performance. Good interpersonal skills are essential. They are effective communicators skilled in active listening. They use feedback, not criticism, to change behaviour by welcoming and encouraging an open, free exchange of ideas between the learner and themselves. They guide the learner to correct conclusions.

Coaches establish a climate that supports collegiality, continuous growth, risk taking and trust. They are good communicators and use a common vocabulary with the learner. They listen attentively with comprehension and are known to keep their word (Haas, 1992).

As well, good coaches understand the principles of giving feedback. They make it descriptive, not judgemental or punitive; specific, not general. They focus on behaviour(s) that the learner can change, not basic character flaws. They time the feedback as close to the event as possible (Perrone, 1992). They give it regularly and frequently, always focusing the learner to the performance that needs work. It is meaningful and constructive, and based on the principle that adults learn best and are less apt to repeat mistakes, if they understand the rationale behind rules and regulations (Clemmer and McNeil, 1988).

Appropriate feedback generates energy in learners who are motivated to improve. It is a balance between positive and negative observations that tells them how well they are doing at meeting their goals and objectives. It is best solicited, not imposed. When given, the receivers themselves are encouraged to determine what changes are needed to get them back on track. Good feedback deals with things that can be changed, and only incidents or behaviours that are likely to be repeated. Coaches avoid using emotion-laden terminology that will confuse and cloud the issue under discussion (Gordon, Zemke & Jones, 1988).

In order to create an environment that is physically and psychologically comfortable for learners, coaches require a working knowledge of the principles of adult learning and the skills to apply them. Based on these principles, coaches expect learners to be willing to take responsibility for their own learning and to be self directed. They provide learners with opportunities to express their personal views based on their life experiences, thereby making learning a co-operative activity (RNAO & OHA, 1991).

The more manual dexterity involved in the skill being taught, the more important it is for coaches to be experienced in the smells, the touch and the sounds of the job. They must be able to monitor performance against established goals and expectations, and require the analytical skills with which to do so. Firsthand knowledge renders them more credible. They are capable of identifying an increased level of sophistication in the performance of the learner as it occurs (Gordon, et al., 1988).

Coaching Process! What is That?

As previously stated, coaching is a cyclic process. Coaches start by observing their learners and gathering information. An honest appraisal of current performance is then given. Together, they set goals and objectives that enable learners to achieve the desired standards of performance. The objectives identify realistic incentives and outcomes that are measurable and focused on performance achievements and solving problems. Specific behaviour criteria are identified, expectations clarified, and a course of action decided upon (Haas, 1992).

Once established, the plan is implemented. A variety of strategies can be employed, such as self learning packages, videos, demonstrations and workshops. Imagination is the only limit to the assortment of relevant learning opportunities coaches can use to help learners achieve their goals.

Coaching in the Operating Room. Would it Work?

There is a saying in the profession, that "nurses eat their young" and the operating room nurse would be no exception to this rule. Since coaching needs a positive environment that fosters trust and commitment, it would seem unlikely that it would succeed in such a hostile setting.

However, as health care continues to downsize, workloads increase, while opportunities for formal training decline. Education is often seen as a fringe benefit, readily sacrificed in financially difficult times. Formal coaching takes time to plan, prepare and execute, but opportunities for informal coaching occur throughout the course of daily business in every Operating Room. Coaching can take place almost anytime, anywhere. It can be done before, during and after an event, wherever and whenever a learning opportunity arises. All levels of staff can engage in the process, and in settings, such as the O.R., where periods of free time are unpredictable, such flexibility is very appealing.

Perioperative nurses, as adult learners, focus on learning that is relevant to their jobs. They are anxious to integrate new knowledge and skills immediately into their practices. Coaching can facilitate this process. It can be used on tasks ranging from the most simple to the most complex, and can be customized to meet individual learning needs. It is, therefore, well-suited to the fast moving, ever changing, environment of the Operating Room, where time is limited, budgets restricted, but the need is often great.

As well, coaching maximizes the performance of highly motivated, capable individuals who show ability and would like to become more polished and proficient in their chosen field (Mott, 1992). It provides a venue for informal leaders in an O.R to share expertise with their colleagues and helps foster that positive learning environment that supports collegiality, not cannibalism! Nursing needs ways of rewarding clinical expertise as well as nurturing their young. Since Clinical Ladders are not permitted in unionized hospitals in Ontario, encouraging and supporting coaches is one method of rewarding those nurses who want to go that extra mile.

There are unique challenges for coaches in the Operating Room. They can be forced to intervene when a learner's actions put a patients at risk. Often, they are not afforded the luxury of offering feedback in privacy; they must act immediately, whatever the risk to their learner's self-esteem. How well they manage these awkward situations will depend on how well trained they are in the skill of coaching.

Coaching skills are valuable interpersonal skills that are also transferable to many other situations. For example, dealing with surgeons can be very difficult at times, and the skills used during coaching sessions give coaches the practice needed to gain confidence in dealing with such individuals more effectively.

In conclusion, coaching is a process of helping employees recognize opportunities to improve their day-to-day performance. It is a cyclic process of observation, planning, implementing and evaluation. Coaches are not born but trained. They analyze behaviours and help learners identify and implement goals and objectives that will improve performance.

Coaches must be credible and have a working knowledge of what they are coaching. They are patient, tolerant individuals who know when it is appropriate to intervene and when it is not. They are flexible **(Cole - continued on page 41)**

CAS discuss aspects of Anaesthesia Assistant Role

A Joint Report By Loretta Thomas-Aasen, RN, BSN,(ORNAC) and Susan Dunington, BSc, RRT, (CSRT)

Edmonton was the site for the 51st Annual Canadian Anaesthetists' Society (CAS) meeting June 17-21,1994. A number of allied health care professionals (RT's, RN's, Anaesthesia Technicians) were in attendance; setting the stage for a number of progressive discussions.

As members of the CAS Task Force on Anaesthesia Assistants (TFAA) representatives of the Canadian Society of Respiratory Therapists (CSRT) and the Operating Room Nurses Association of Canada (ORNAC) were invited to attend the convention to participate in the CAS Council meeting. At this meeting, Dr. John Atkinson, Chair of the CAS TFAA would present the Interim Task Force Report on Anaesthesia Assistants. In addition, we were also invited to attend the scientific program which contained a number of pertinent topics related to this issue.

Initially, the educational forum held a symposium which discussed "Allied Health Caregivers in Anaesthesia". Four speakers:

Dr. D. Craig (Winnipeg, MB)
Dr. L. Perreault, (Montreal, PQ)
Dr. W. Frazier, (Atlanta, GA), and
Dr. J. Atkinson (Ottawa, ON) presented the pros and cons of increased and active involvement of RT's, RN's, Technicians, and Technologists in the day to day administration of anaesthetic care to patients. In addition, safety, economics and lines of responsibility were discussed. The discussion primarily centered around the concepts and elements of a physician driven anaesthetic care team. Clearly the issues were:

- **Cost related: for example (i.e.), is this going to cost more or less?**
- **Patient care related: i.e. will patient care improve, suffer, or will there be no change?**
- **Responsibility related: i.e. will this allied health professional (AHP) function under direction or isolation?**
- **Which professional groups should become Anaesthesia Assistants?**
- **Accountability and reporting: i.e. will the AHP be paid from the Department of Anaesthesia budget or allocated within the hospital budget?**
- **Is this role necessary?**
- **Qualifications and educational requirements?**
- **Will this be government driven versus CAS driven?**
- **Who will represent the Anaesthesia Assistants: i.e. will there be a national professional association?**

and,

- **What have we learned from the Quebec and U.S. experiences?**

It is encouraging that the CAS is willing to support a discussion of this issue in their national symposium. While they have also opened other avenues for discussion on this topic through their Committee on Allied Health Professionals (CAHP) and through the newly created (1993) TFAA which reports to the CAHP; it is evident that it will take an increased promotion of the concept of Anaesthesia Assistants to the CAS membership at large, before a general consensus is reached.

The CAS Council met at the conclusion of the scientific program. On the agenda was the presentation of the TFAA Interim Report by Chairperson Dr. John Atkinson. CSRT and ORNAC representatives were invited to observe the Council meeting at this time for the presentation of this report. Recommendations, concerns and opinions regarding the Anaesthesia Assistant role were discussed by a number of the Council members. Ultimately, CAS Council agreed to proceed with the Task Force mandate. Dr. Angela Enright CAS President thanked Dr. Atkinson and committee members for a job well done; she anticipates future correspondence with enthusiasm.

Loretta Thomas-Aasen, President Elect of ORNAC and Research Committee Chairperson (left) at the CAS Edmonton meeting shown with the Executive Director of the CAS **Ann Andrews**, (centre) and **Susan E. Dunington**, representing the CSRT.

Coaching - As A Framework for Developing Staff

Cole - Continued from page 39....

and creative, using a variety of strategies to provide meaningful learning opportunities.

Coaching would work well in the Operating Room by helping create a positive work environment that is conducive to learning. It affords opportunities for the expert and the novice to share knowledge and skills.

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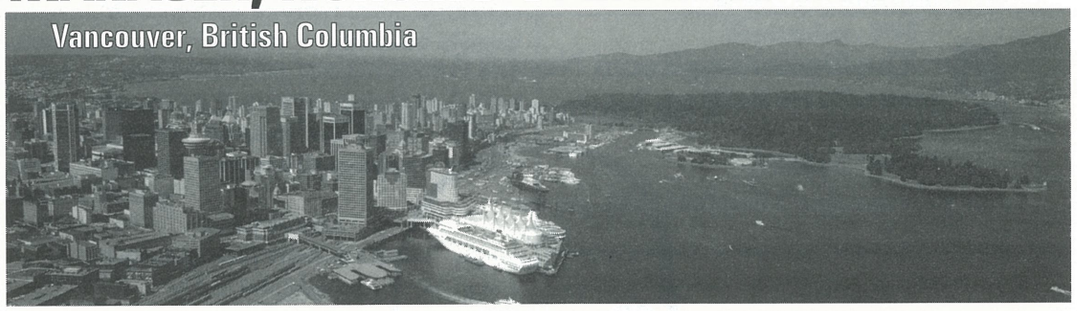

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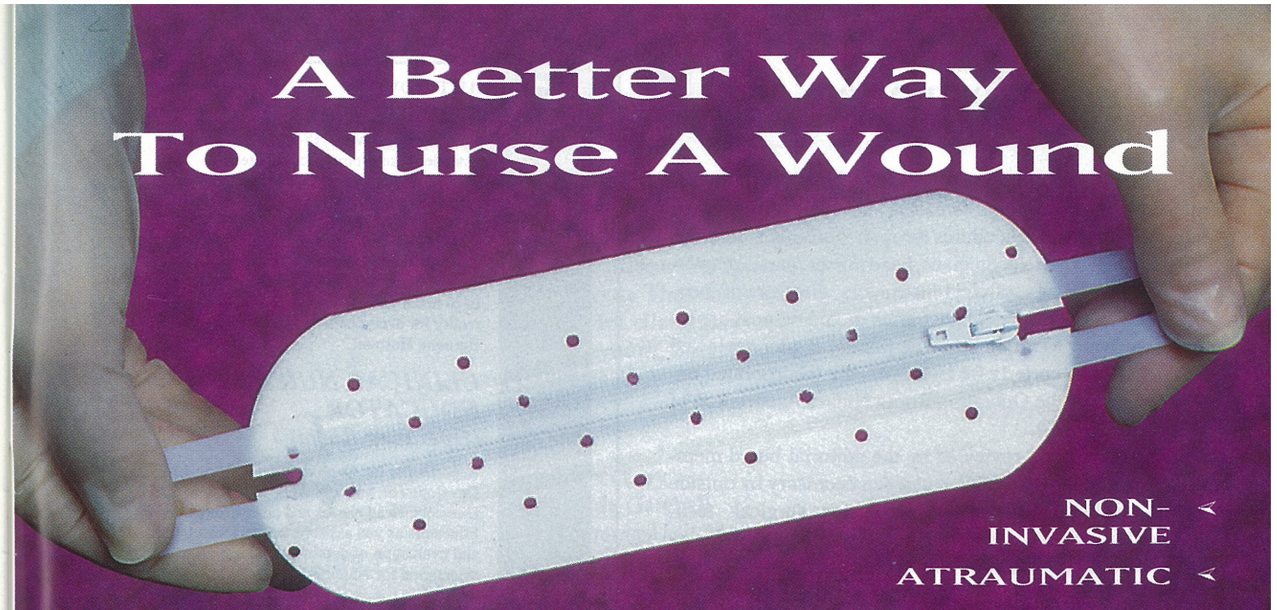

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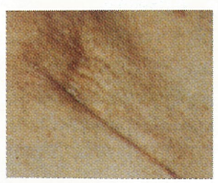

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