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**Laser Surgery**  
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A crucial issue in laser surgery is the credentialing of the nurses and physicians who will be participating in a laser surgery program. This issue is discussed in depth.

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Laparoscopic cholecystectomy is a safe and economical alternative to the traditional surgical methods used for the removal of a diseased gallbladder. Recently, laparoscopic cholecystectomy was introduced at Mount Sinai Hospital in Toronto. It is herein discussed and clinically described, with the focus on the perioperative nurse's role.

By Sharon Gabriel

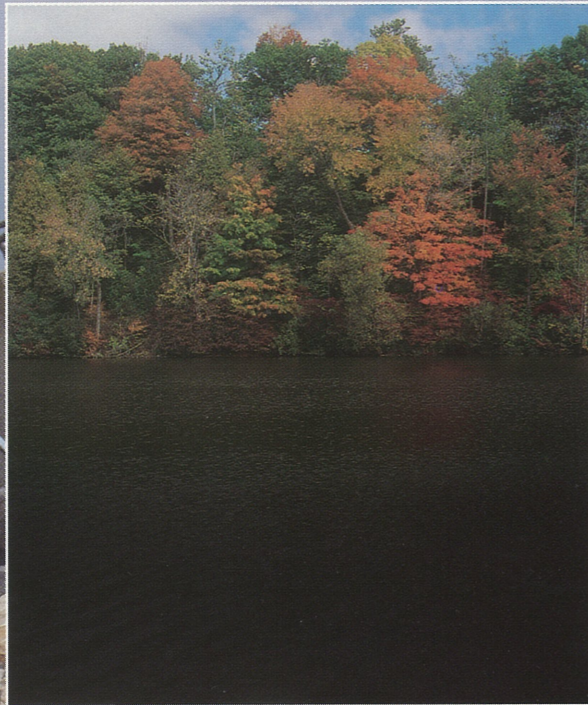
##### 25 Laser Laparoscopic Cholecystectomy

Laser surgery is still another option to traditional methods for the removal of a diseased gallbladder. Laser therapy in this area has certain advantages - and disadvantages.

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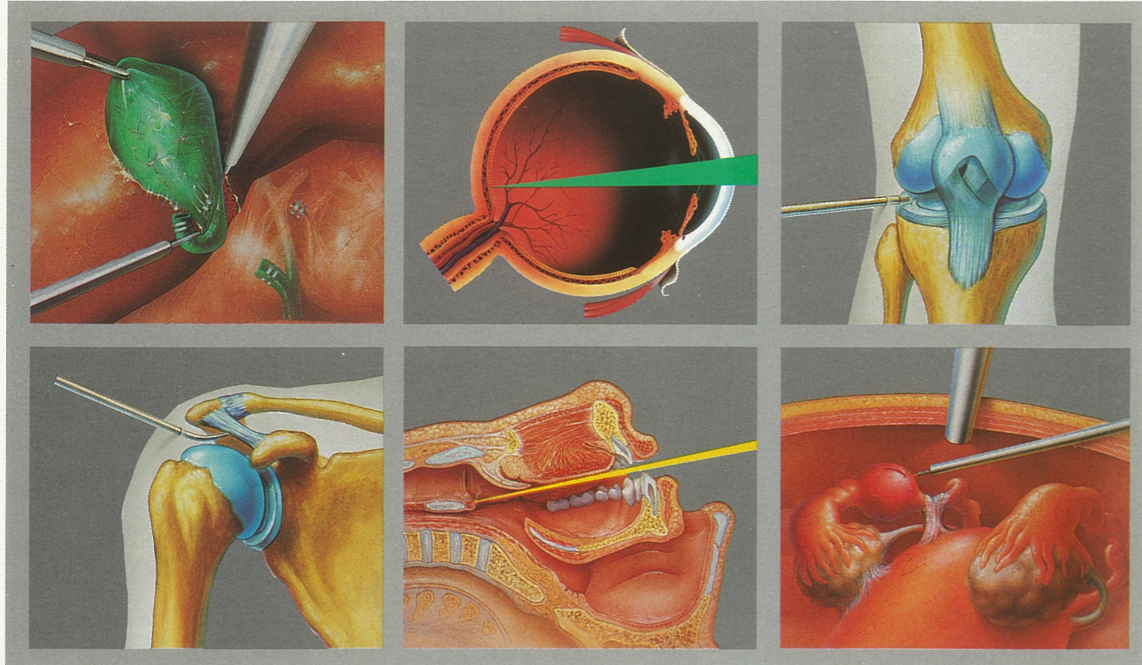
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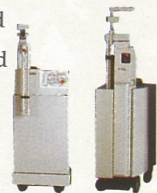


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## Laser Surgery

# Credentialing (in laser surgery)

By V. Cecil Wright, M.D. and Mary Ann Riopelle, B.A.

The success of a laser program, like that of any multidisciplinary project, depends on co-operation among many individuals and institutional departments. Consistent monitoring of the function of the entire laser program, done by the laser committee, and strict adherence to safety requirements by all involved staff will make the program a source of pride for the institution and ensure state-of-the-art care.

The most significant limitations of laser procedures are not necessarily those of the technology itself, but those related to the knowledge and skill of the practitioners utilizing the equipment, and that of the support staff.

A crucial issue is the credentialing of nurses and physicians who participate in the program. This credentialing process is usually administered by the laser committee. (See "Laser Committee" next page)

The ultimate authority and responsibility for awarding medical staff privileges, including laser privileges, rests with the governing body of the institution. Each institution, however, will have its own unique requirements for obtaining privileges and pathways for obtaining them.

### Laser nurse requirements

Generally, the medical staff bylaws insist that a physician applying for laser privileges provide evidence that all required training has been obtained and that the individual has competence to perform procedures using lasers.

This also applies to laser nurses, who must have evidence of special training before being assigned to surgical laser cases.

Physicians requesting privileges to use lasers should first meet all the standards of the particular institution with respect to eligibility, special training, ethical character, judgement, etc.; and surgeons should have interventional privileges before requesting laser interventional privileges.

For example, a gynecologist requesting privileges for laser surgery of lower genital disease must first (or also) have operative privileges for the procedures. Likewise, a general surgeon wishing to obtain privileges for laparoscopic YAG laser cholecystectomy must have operative laparoscopic experience with that laser and privileges for conventional cholecystectomy. Finally, the safe and effective use of lasers, like other modalities, requires that the surgeon understand the disease as well as the particular laser delivery system.

### Training and privileges

An applicant for hospital or other institutional privileges (such as a centre for a free-standing endoscopy unit), should be familiar with the pertinent contemporary literature and should have completed a basic laser training course. The course must have covered the principles of lasers, including physics, properties of the laser beam, the calculation and surgical importance of power density, physiological effects and hazards of the various wavelengths, safety precautions and the indications and surgical techniques appropriate to the specialty or sub-specialty. Specific and comprehensive course content is recommended by the *American Society for Laser Medicine and Surgery*.<sup>1</sup>

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## The laser committee: composition and responsibilities

It is essential that an institution with an established laser program, or one considering a program, provide proper controls of laser activity in order to minimize hazards and provide optimal care for surgical laser patients. This is best accomplished by instituting a laser committee which is responsible for all laser activity within the institution. It could be a sub-committee of the OR committee. The following members are usually recommended:

- the chief of surgery
- a representative of each sub-specialty with an interest in lasers
- a representative from the dept. of anaesthesia
- a representative from administration
- an operating room supervisor
- an operating room nursing team leader
- the biomedical or clinical engineer
- the laser safety officer
- the medical director of the institution
- a representative from nursing administration

The laser committee should be the ultimate authority and responsible for the institutional laser program. If laser credentialing is in their mandate, it is this committee that usually administers the credentialing process.

Laser committee members should be chosen wisely. The chair-person should be the most knowledgeable regarding lasers, laser procedures and their application.

This committee should routinely meet to discuss any problems that have occurred or are expected to occur. It should review the progress of probationary and fully credentialed surgeons and nurses and evaluate new applications to the program.

The laser committee designates the laser safety officer who is best qualified. The chief laser surgery nurse or an alternate should be present at each laser case. These individuals should be given the authority to suspend, restrict or terminate a laser procedure should any hazard arise. ■

A basic laser course should consume at least eight hours (as suggested by the *American National Standards Institute's ANSI Standard for the Safe Use of Lasers in Medical Institutions*)<sup>2</sup> of which forty percent should be allocated to practical sessions in which the novices use surgical laser systems and their various delivery mechanisms (such as hysteroscope, microscope, bronchoscopic delivery mechanisms or catheter or free-hand delivery mechanisms) on inanimate biological tissue models which simulate human tissue types, and on animals if appropriate and available.

Double this amount of time may be necessary to cover the appropriate material and provide enough time for each trainee to practice with instruments.

### Concentrated training

Sometimes a basic course concentrates on one wavelength and a limited range of applications, such as a carbon dioxide laser course in which that laser is utilized exclusively with colposcopy, or a dermatology course in which free-hand use of the argon laser constitutes the entire course content. In this case, the minimum number of hours might be sufficient. Subsequent courses covering different wave-

lengths or substantially different delivery systems should require another six to ten hours, with the majority of time allocated to hands-on sessions. For any course, a small faculty-to-student ratio, in the range of 1:3-5, is best.

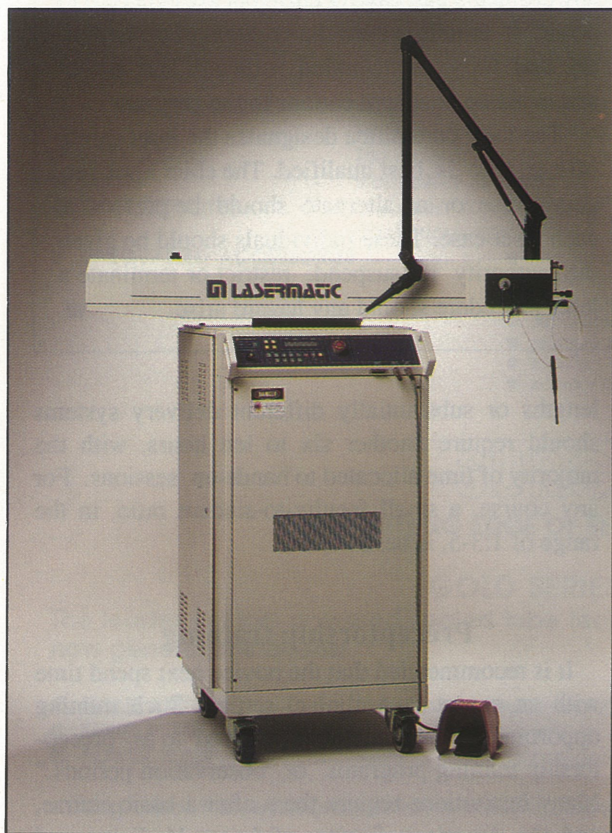
### Preceptorship training

It is recommended that the novice next spend time with an expert in a clinical setting. Such training opportunities are sometimes referred to as "preceptorship training programs" or "observation periods." Many institutions require them after a basic course, and the *American Society of Laser Medicine and Surgery* recommends this type of clinical activity in their "*Standards of Training and Practice for Physicians.*"<sup>3</sup>

In a couple of intensive days or even a more prolonged visitation, the new laser surgeon can see how an efficient clinical laser program functions, including nurses in action, instrument set-ups, operative techniques and patient positioning, methods for dealing with complications, protocols for diagnosis and follow-up, appropriate terminology and methods for dictating the procedures and the laser parameters utilized and seeing the safety guidelines

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put into practice. It is important that a variety of cases in the particular specialty be observed and discussed with the expert and that documentation of the nature and duration of the clinical training be obtained by the novice.

### Applying for privileges

At this point, the new laser surgeon should be allowed to formally apply for privileges through the established institutional channels. The instructions for making application are usually included in the policies and procedures manual for laser surgery. This document should be obtainable from the laser committee, the laser safety officer or from the operating room supervisor. No more than a year should elapse between course and application, or between preceptorship and application.

In most institutions these first privileges are probationary. They require that the novice be supervised during the first several cases or for the first few months by someone of the same discipline who is locally available and experienced in the types of procedures the novice wants to perform. This enables the novice to demonstrate his knowledge and skill to the local authority and to benefit from the evaluation and commentary of the experienced surgeon.

During the first series of cases, the novice should be required to conduct an audit of his or her laser cases, recording in a prospective fashion the indications, treatment approach, treatment outcome and quality of result, accidents, complications and their management. A summary of this audit should be presented to the laser committee at the end of the probationary period when full privileges are sought by the applicant. The committee can then evaluate the results of the series, deliberate on the impressions of the supervisor, determine whether competence is assured and award full privileges or recommend correctional action if necessary.

### Wavelength by wavelength

Because tissue effects, instruments, safety precautions, technical difficulty, indications for laser, surgical technique, and follow-up care can be radically different between wavelengths, it is recommended that physicians be credentialed one wavelength at a time. A similar "sub-credentialing" could apply to laser nurses. In some disciplines, such as gynecology, it may be necessary to further subdivide by delivery system, so that, for example, gynecologists

who are applying for privileges for carbon dioxide laser surgery used through the colposcope for lower genital disease will have different credentialing criteria and prerequisites than those who want privileges for laparoscopic use of the CO<sub>2</sub> laser. 4

### Training

In lieu of extramural coursework, observation and supervision, an applicant should be able to fulfill the requirements during a residency program if that program has organized instruction which includes didactic and practical sessions incorporating the necessary material. The same minimum number of hours applies as for practicing physicians who take a basic one or two day course. But because these requirements are not always met, the laser committee and the institutional board must scrutinize the details of the residency laser training program. Most important is determining whether adequate training in basic science and safety was provided and whether the individual had didactic instruction in the required theoretical, safety and applications material. It must be determined whether enough time was provided in practical sessions devoted to the surgical techniques for the novice to understand the equipment, develop hand-eye co-ordination and appreciate the variation in tissue effects which can be achieved by varying the laser settings. Too, it is important for the committee to know the amount of time devoted to observation of cases and the number and variety of cases.

Finally, the committee should learn the details of any actual clinical cases performed by the applicant during the residency program and the outcome of those cases. Weakness in the residency laser program should cause the laser committee to require another course, a preceptorship program or supervisory period.

### Quality assurance

The laser committee should keep track of physicians in the program who have been granted full privileges to ensure that an adequate number of cases is routinely performed for the surgeon to maintain expertise and that outcomes are satisfactory. Periodic updating in indications, techniques, safety precautions and results of laser surgery is highly recommended. This updating can be accomplished by attending stand-alone extramural or institutional courses, advanced training programs or updates

by participating in the scientific sessions of relevant medical societies.

New instruments and delivery mechanisms, different wavelengths and improved techniques can render older methods and devices obsolete or prove them hazardous. Keeping up with this highly technical and challenging field of medicine requires even more continuing education than the already complicated and challenging surgical specialties. But the ultimate goal, for physicians, nurses and institutions, as a result of training and practical standards, is safe and effective patient care.

Some surgical laser committees may require documentation of continuing education from those with full privileges. Certificates describing the pro-

gram, listing the faculty and specifying the number of hours of didactic training and of hands-on sessions can be used for maintenance of privileges.

### Extending privileges and certification

A significant change in wavelength, indication or delivery system should require further training and another application for laser privileges. For example, the laparoscopist who is routinely using the CO<sub>2</sub>, would be required to provide evidence of training in hysteroscopic Nd:YAG laser photoablation before privileges would be granted for this surgery.

At present, there is no widely accepted standard for credentialing laser surgeons or certifying exper-

## The laser nurse - areas of responsibility

It is impractical for all operating room nurses to become involved with laser surgery because of the expertise and constant practice which are required. Only those nurses who show keen interest and can be expected to maintain this interest should be considered for training.

The registered operating room nurse must complete a recognized post-graduate course on laser surgery to be certified. The course should cover basic laser physics, optics, instrumentation, safety, hands-on practical sessions with the instruments, operating room set-ups and the procedures for which the laser(s) will be used.

The laser nurse must demonstrate competence in the practical use of the equipment and the setting up of the surgical suite. An examination pertaining to the laser application the nurse is expected to encounter is useful for credentialing as well. The chief laser functions of a laser nurse can include the following:

1. Assist the laser committee in setting up the laser surgery program.
2. Assembling the surgical instruments and auxiliary equipment required for the procedures.
3. Obtaining and maintaining the necessary safety equipment.
4. Assuring that all safety precautions are adhered to during the performance of laser surgery and between laser cases.
5. Provide training and supervision to novices.

6. Assure that all personnel in the operating room are fully trained and credentialed for the procedure by the laser committee.
7. Contribute to the development of a laser nursing manual for the institution.
8. Discuss with the laser safety committee chairperson any problems or potential problems regarding scheduling of cases, concerns of staff or patients, equipment, etc.
9. Maintain a dialogue with the laser surgeon during surgery to confirm his/her commands regarding exposure and power and activating and de-activating the laser.

It must be recognized that surgical techniques which are used in laser surgery vary from laser to laser, from procedure to procedure and from delivery system to delivery system. Therefore, considerable nursing training is required for all nurses to be familiar with all equipment and procedures pertaining to all laser devices.

The routine maintenance of lasers, laser accessories and equipment is usually the responsibility of nurses and biomedical engineers. It is essential that all those caring for the instruments attend the manufacturer's in-service training sessions which should include a review of the following: the mechanism of action of the particular laser and its clinical applications, provide detailed instruction on the instrument's operations and maintenance, and thorough discussions on applicable safety precautions.

tise. There is, however, an examining board, called the *American Board of Laser Surgery*, which was formed in 1985 in the United States to administer an examination to laser surgeons to determine their knowledge of the basic science and safety of lasers and of laser techniques in their particular surgical specialty.

This board was formed in response to numerous requests from hospitals for assistance in the credentialing process. This examination, plus the recommendations for course content and standards of training and practice of the *American Society of Laser Medicine and Surgery*, may ultimately contribute to uniformity in institutional laser credentialing in North America.

The *American Board of Laser Surgery* is not at present accredited by the *American Board of Medical Specialties*. It is not known whether passing the two-part exam will someday be required by institutions, and, of course, the board can test for knowledge, but not for surgical skill. Nevertheless, passing the exam is further evidence of significant commitment and accomplishment by the individual laser surgeon.

In Canada, *Health and Welfare Canada*, the *Canadian Standards Association* and the *College of Physicians and Surgeons of Canada* are all working on their own standards of training and practice for safe use of lasers in health care facilities.

### Laser nurses

During laser procedures which require nursing assistance, at least one nurse must be fully trained and "credentialed" or "certified." Special expertise and constant practice with the instruments and safety precautions are required of nurses in the laser environment.<sup>5</sup> Not every operating room nurse needs to be trained as a laser nurse, but those who are interested should be selected for the laser team. The nurses selected should complete a basic laser course designed for nurses and it should incorporate didactic sessions on basic science and safety of the same calibre and depth as for physicians. The course should also review all wavelengths and applications likely to be performed in the institution, as well as the types and special care and handling of instruments and laser accessories.

Surgical approach, room set-ups including draping and patient positioning, proper operation of evacuation systems, developing policies and procedures and establishment and administration of a

laser program should be part of the course.

A hands-on workshop-type session is valuable for learning the couplings of lasers to laser delivery systems and for allowing the nurses to operate the lasers and practice setting the control panel in response to commands.

### Manufacturers' inservice sessions

Instruction in troubleshooting is also a necessity. In-service sessions arranged by manufacturers or distributors are necessary for technical orientation but do not replace the didactic and practical basic training program.

The *American Society of Laser Medicine and Surgery's Nursing Section* is developing standards of training and practice for nurses for lasers in surgery and medicine. The final document, expected to be presented to the *American Board of Laser Surgery* in 1991, should be a valuable resource.

Naturally, as the laser program develops and applications are expanded, nursing staff should be prepared for different procedures with additional training programs, including practical sessions, especially when delivery mechanisms or wavelengths change, or when new applications are developed. Nurses are important members of the laser surgical team and the laser program. The orientation of nurses, their training and continuing education needs should not be neglected. ■

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# Laser medical surveillance

## A program for operating room nurses working with lasers

By Mary Knight Kubasiewicz, R.N., M.N.

In the spring of 1990, the Riverside Hospital of Ottawa acquired a carbon dioxide (CO<sub>2</sub>) laser for use in the operating room. The facility is a 274-bed active treatment community hospital, and the purchase marked this hospital's maiden voyage into laser surgery.

As nurses operating the laser became aware of issues related to the safe use of lasers, it was decided to develop a policy which would outline a medical surveillance program for hospital personnel involved in the care of patients undergoing laser surgery. Because Canadian standards on the safe use of lasers are currently in the final stages of development by the Canadian Standards Association, the following American resources were used:

- American National Standards for the Safe Use of Lasers (ANSI Z136.1 - 1986);
- American Standard for the Safe Use of Lasers in Health Care Facilities (ANSI Z136.3 - 1988); and,
- Recommended Practices: Laser Safety in the Practice Setting (A.O.R.N., 1989).

Generally speaking, the focus of medical surveillance programs is to assess exposure to a specific agent or hazard. With CO<sub>2</sub> lasers, the potential hazards for operating room personnel are eye and skin exposure. There are three purposes for conducting a surveillance program:

### Purposes of a surveillance program

1. To establish a baseline against which ocular damage can be measured in the event of accidental injury.
2. To supply a baseline level of ocular performance at initiation and termination of employment.
3. To identify personnel with a risk of photosensitivity, as the cumulative effects of laser radiation are not known at this time.

(ANSI 1986 & 1988)

### Literature review

(See references - page 13)

To round out the prospective provided by the above resources, a literature review was done. In 1977, an American study was reported which examined the results of over 800 medical surveillance ocular examinations on microwave and laser workers (Hathaway et al, 1977). The study found no evidence of effects that could be attributed to work with

either laser or microwave radiation. It was concluded that periodic medical surveillance should be limited to pre-assignment, post-accident exposure and employee-termination eye examinations.

A British study found that safety measures adopted in laser laboratories have led to a degree of containment and control (of the laser) which makes the routine ophthalmological surveillance of laser workers unnecessary (Friedmann, 1978).

However, the author points out that from the medico-legal point of view, there may be some advantage in requiring all new recruits to laser work to have a pre-employment ophthalmological exam.

More recently, Wolbarsht and Landers (1985) suggest that surveillance done before exposure to specific ocular hazards may be best accomplished with a battery of tests of specific visual functions. They also indicate that the major medical and legal consideration is the detection of retinal changes which cause disturbances of visual functions.

An article by Hildebrand (1990) outlines a sample program for medical surveillance of health care personnel using lasers in surgery. Ball (1990) recommends following the ANSI Standards (ANSI, 1986 & 1988), and also provides a sample policy and procedure for implementation. The reasons for an ocular surveillance program, as well as the realities of implementation are discussed in a recent article ("Baseline Eye Exams," 1990).

### Policy and procedure

On the following page, the box represents the final draft of the policy and procedure developed at the Riverside Hospital of Ottawa. The policy was developed utilizing the American standards and Ball's example (1990). At the present time, initial eye examinations are being arranged with an ophthalmologist at the Riverside Hospital facility. ■

### References

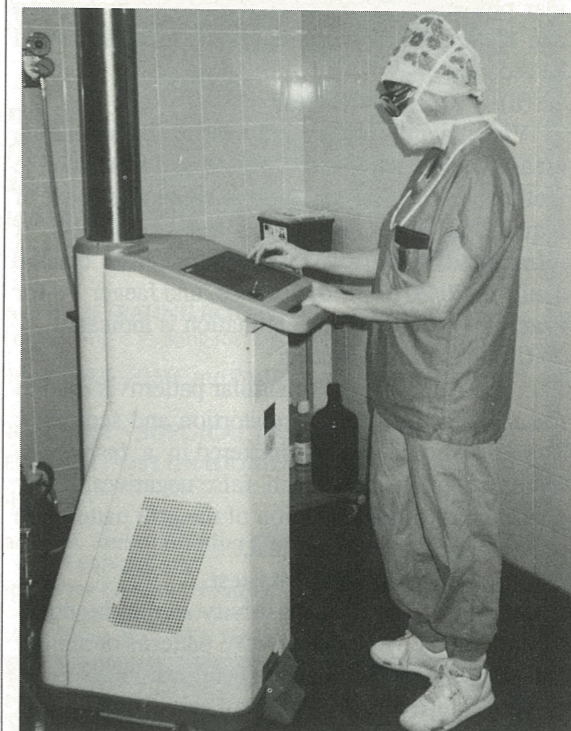
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### About the author

Mary Knight Kubasiewicz graduated from Grace General Hospital in Winnipeg. She received her B.Sc.N. from the University of Alberta and M.N. from the University of Manitoba. This article was written while she was a Nurse Clinician, OR, Riverside General Hospital of Ottawa.



A laser nurse at Riverside General Hospital of Ottawa operates the laser delivery console during a procedure.

**Riverside Hospital of Ottawa**  
(Occupational Health Services)  
**Laser Medical Surveillance Program**

**PURPOSE:** 1. To ensure a baseline level of visual performance against which damage can be assessed in the event of a laser accident (particularly oriented towards ocular hazards).

2. To identify those individuals who may be at special risk from ultraviolet hazards (primarily directed towards dermatological hazards).

3. To supply a baseline level of ocular performance at initiation and termination of exposure and environment, i.e., pre- and post-employment physical examination.

**PROCEDURE:** 1. Ocular examination

1.1 Laser team members (nurses qualified to operate the laser) shall have the following ocular examination upon initiation and upon termination of employment in the operating room.

(i) Ocular history

The past eye history and family history are reviewed. Any current complaints concerned with the eyes are noted. Inquiry should be made into the general health status with a special emphasis upon systemic diseases which might produce ocular problems. The current refraction prescription and the date of the most recent examination should be recorded.

(ii) Visual acuity test

Visual acuity for far and near vision should be measured with some standardized and reproducible method. Refraction corrections should be made if required for both distant and near test targets. If refractive corrections are not sufficient to change acuity to 20/20 (6/6) for distance, and Jaeger 1+ for near, a more extensive examination is indicated.

(iii) Macular function

An Amsler grid or similar pattern is used to test macular function for distortion and scotomas. The test should be administered in a fashion to minimize malingering and false negatives. If any distortion or missing portion of the grid pattern are present, the test is not normal.

(iv) Contrast sensitivity test

Contrast (or glare) sensitivity should be documented by the Arden sine-wave patterns or similar acuity tests which include low contrast images.

(v) Fundoscopic examination

The points to be covered are:

- the presence or absence of opacities in the media;

- the sharpness of outline of the optic disc;
- the colour of the optic disc;
- the depth of the physiological cup, if present;
- the ratio of the size of the retinal veins to that of the retinal arteries;
- presence or absence of a well defined macula and presence or absence of a foveal reflex;
- any retinal pathology that can be seen with an ophthalmoscope (hyper-pigmentation, depigmentation, retinal degeneration, exudate, and induced pathology associated with change in macular function). Even small deviations from normal should be described and localized.

1.2 Other laser nursing personnel (includes those whose work may cause them to be exposed to laser energy sufficient to damage eyes or skin) shall have the following ocular examination upon initiation and termination of employment:

- Ocular history
- Visual acuity test
- Macular function
- Contrast sensitivity test
- If any abnormalities are noted, then further fundoscopic examination is necessary.

2. Skin examinations

The Occupational Health Service will review with employees any history of photosensitivity. Any previous dermatological abnormalities and family history are reviewed. Any current complaints concerned with the skin are noted as well as the history of medication usage, with particular concentration on those drugs which are potentially photosensitizing.

3. All reports of the ocular and dermatological examination will be kept in the employee's confidential occupational health file.

4. Ocular accidents

Any person involved in a laser ocular accident will have a complete ophthalmological examination, including fundoscopic examination. Any occlusion when protective eye wear is not worn during an operation of the laser should be reported as an incident.

5. Skin accidents

Whenever a staff member's skin is directly exposed to the laser beam, treatment shall be received immediately in the emergency department. The Occupational Health Department shall be notified as soon as possible.

6. Incident reports shall be completed whenever exposure or possible exposure to the laser occurs.

7. All medical staff will assume their own responsibility for laser medical surveillance. ■

**Surgical reports show that sponges left in patients are grossly underestimated**

The number of retained surgical sponges following laparotomies, despite precautions, is grossly underestimated, according to Dr. William Rappaport and Dr. Kevin Haynes, surgeons at the Arizona Health Sciences Center, in a report in *Archives of Surgery*. They report treating four patients in the span of ten years with locked-in intra-abdominal compresses.

Surgical notes for two of the patients show that two separate operating crews in both cases did sponge counts because of shift changes. In both cases, sponge count figures were reported as correct.

However, the counts were done while the fascia were being shut with abdominal pads to facilitate

closure. The final sponge counts were made after occlusions.

Citing a report of the number of foreign bodies left in intra-abdominal surgical patients, the doctors noted that the ratio was one per 1000 to 1500. Another study cited found that half of retained sponges went undetected for five years or more after surgery.

To correct the sponge matter, Rappaport and Haynes stress prevention. They suggest that surgeons explore the abdomen to ensure that every pad is removed. "This is especially important when pads are placed away from the area operated on."

**Radiopaque**

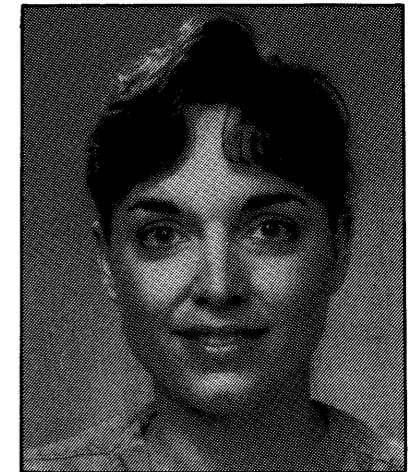
They also mention that in a shift change, the new personnel should make two counts, and suggested that only sponges with radiopaque markers be used. ■

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# Clinical laser therapy and pain management

Various techniques are being studied as an option to conventional treatments for chronic pain: acupuncture, hypnosis, wholistic medicine concepts, etc.

Laser therapy is another alternative, and researchers are currently investigating this medium as a viable means of pain management.

In the following article, edited for publication from the *Journal of Clinical Laser Medicine and Surgery*, June, 1990, by John Lauerman and Robyn Rosenbaum, current research into lasers and pain control is reviewed.

A number of researchers are currently engaged in groundbreaking studies that may yield previously unknown applications for the laser in the area of pain control. Their research may even provide basic information about the nature of the nervous system as they hunt for information on the laser-neuron interaction.

## Selective neuron destruction

Laser applications in the nervous system have been confined to cutting and vaporizing with the CO<sub>2</sub> laser and the coagulation of blood vessels with the Nd:YAG laser. These are considered high-temperature lasers, and are normally used for their ability to obliterate tissue and thus destroy malignancies and malformations.

Research is currently underway, however, to see how these and other lasers interact with neurons. These researchers hope that lasers can be used to selectively destroy pain-sensitive neurons, thereby combating certain intractable pain syndromes that have proven resistant to almost all conventional methods of treatment.

Conditions that can result in continuous pain are back pain, causalgia (pain due to nerve fibre injury), phantom limb pain that persist in nerves emanating from amputated limbs, stump neuromas, pain from tics, and from various types of cancer. Pain can also result from lesions of the somatosensory pathways in the spinal cord, brainstem, and thalamus.

## Conventional methods

Several conventional methods are currently employed in treating these various pain syndromes. Rhizotomy, or the cutting of the spinal nerve roots to deactivate the troublesome nerve, is one such method. However, this procedure can result in loss of important and healthy functioning nerve tissue.

Other widely used methods include transcutaneous electrical nerve stimulation (TENS) - in which nerves are electrically stimulated - and the administration of analgesics. Both these methods are addictive, with TENS possibly even contributing to a patient's pain in the long run.

## Selective photothermolysis

Because of the need for a more satisfactory method for treating chronic pain, researchers have directed their lasers at the problem. Originally, two medical researchers at the Harvard Medical School, Dr. John Parrish and Dr. Ron Anderson, developed the idea of destroying melanin-containing cells and micro-vessels using selective photothermolysis.

They discovered that the tunable-dye laser could be focused specifically on the red blood cells inside enlarged blood vessels. So focused was the laser

that the tissue between the blood vessel and the surface of the skin was left intact.

It was the selectivity of the tunable-dye laser and the Anderson-Parrish research that inspired a professor of neurology at Harvard, Dr. Jeffrey Macklis, to apply their experimentation to pain neurons.

Dr. Macklis considered it an interesting idea to see if chromophores (molecules designed to absorb specific colour bands) could be put into selective populations of neurons by having certain kinds of nervous system cells actively store these molecules.

Dr. Macklin's inspiration was successful to the degree that he and associate, Dr. Roger Madison of Duke University, were able to induce brain and peripheral nervous system cells to selectively store chromophores in vitro.

## Pain neurons labelled

Presently, Dr. Macklis is attempting to optimize the characteristics of both the tunable-dye laser and the chromophores he has been working with to selectively destroy only pain-sensitive neurons.

Using a recently developed delivery system that labels pain neurons with chlorin e<sub>6</sub>, he hopes to photothermalize only the selected pain cells.

Laser tissue interaction, selective neuron targeting and injury are being studied using live mice as the first experimental model. Chlorin e<sub>6</sub> and a fluorescent label will be injected into the mice, after which the rate, level and specificity of the uptake of chromophores into small-diameter pain neurons will be assessed biologically.

## Impairing the synaptic function

Other experiments using the laser in pain control involve the effects of the Q-switched Nd:YAG laser on various nerve fibres. It appears that the laser can induce preferential impairment of synaptic function in small afferent fibres of dorsal horn cells in the spinal cord and slow-conducting nerves in dorsal roots and peripheral nerves.

Studies have shown that the laser impairs small neural conduction and molecular transport in small sensory nerve fibres, as opposed to fast-conducting fibres. The use of the laser on slow-conducting fibres could prove to have important clinical applications. For instance, pain management, according to Dr. William Rymer of the Chicago Institute of Neurosurgery and Neurological Research, is at its greatest just below the surface of the spinal cord. The laser must be able to affect only those path-

ways involved in pain transmission.

Patients with unrelenting pain from cancer or a tic normally would have to go through a surgical lesion of the spinal cord. Here, you run the risk of damaging pathways that might still be useful to the patient. However, Dr. Rymer says, "with the laser, you might be able to interrupt synaptic transmission without actually cutting the spinal cord."

This kind of pain control research may lead to a new means of laser therapy - a more focused, less invasive form of treatment for chronic, and in some cases acute, pain. Depending on the nature of the ailment and the status of the patient, laser therapy may be viable in a number of illnesses. With successful application of laser therapy, pain syndromes that have been labelled "intractable" may perhaps become labelled "temporary." ■

## World's first stethoscope - a child's toy!

One of the most ubiquitous medical instruments is the stethoscope. Almost everyone can recognize one. But, would you recognize the first stethoscope in medical history? Probably not, unless you were in a Paris park on the afternoon of July 16, 1816.

Napoleon and his armies were playing their games around Europe, and so were a group of children in a Paris park the afternoon that Dr. Rene Laennec, Napoleon's personal physician, visited the park during lunch break and observed the children playing excitedly with a piece of hollowed-out wood.

In reply to his question about what was so important and exciting about the piece of wood, Laennec was told to sit down. One end of the hollow wood was put to his ear. At the other end, one of the boys made a slight scratching noise and the doctor suddenly heard a very loud noise in his ear.

Becoming deadly serious, he rushed back to the hospital which he operated, made a simple cardboard tube and shouted to his assistants that he had a device that would revolutionize medicine.

He headed for a patient with blue lips, diagnosed as having heart disease, pulled up his night shirt, placed the cardboard tube against the area of the heart and put his ear to the other end.

He seemed to become transfigured as he called his oldest assistant to him and asked him what he could hear. The answer defined that which was of essential importance for auscultation (listening).

"Quite strange, I hear heart beats. I can loudly hear heart beats through this silly thing! My God, what an invention!" And the stethoscope was born.

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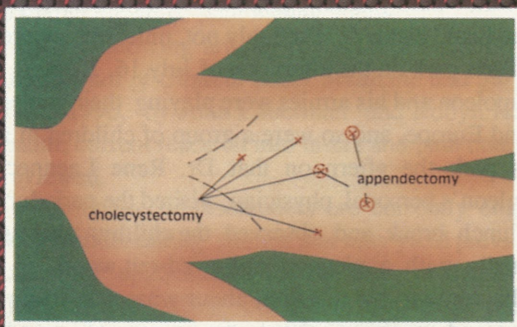


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## General Surgery

# Laparoscopic cholecystectomy

By Sharon Gabriel, R.N., B.Sc.N.

Laparoscopy has been a diagnostic and treatment technique successfully used by gynecologists for more than 30 years.<sup>(6,9)</sup> With recent technical advances in equipment, general surgeons have developed laparoscopic techniques for the diagnosis and treatment of appendicitis and gall bladder disease.<sup>(1)</sup> Laparoscopic cholecystectomy was introduced at Mt. Sinai Hospital in Toronto in July, 1990, the first time this type of surgery was performed in Toronto.

### Traditional cholecystectomy

Traditional cholecystectomy is major abdominal surgery. Postoperatively, the patient requires medication for the treatment of pain, potentially suffers from ileus, is hospitalized for up to seven days, and has a six week recuperation at home. This traditional gall bladder procedure has the risks of major surgery, anaesthesia and involves a considerable investment for the patient in terms of time and loss of income. For the hospital, there is the equal commitment of time and money.

Laparoscopic cholecystectomy, a surgical procedure reported in the United States by Dr. Reddick, et al in 1989,<sup>(7)</sup> is reducing the time of hospitalization between 24-48 hours, with a recovery period of two weeks.<sup>(2,4,5,7,9)</sup> There is considerably less pain with the laparoscopic procedure due to the small incisions (1 to 3 cm in size) and a decreased potential for ileus. Left shoulder pain, a common complaint of patients undergoing laparoscopic procedures, can be controlled through oral medication and heat

applied to the shoulder.<sup>(4)</sup> Cosmetically, the small incisions are much more pleasing to the patient than the traditional longer abdominal incision.<sup>(5)</sup>

### Anatomy and physiology

The gall bladder is a small muscular sac attached to the underside of the right lobe of the liver. It is a storehouse for bile, secreted in the liver and transported via the hepatic duct. Bile, essential to the metabolism of carbohydrates, proteins and fats, is released from the gall bladder when food is ingested. The gall bladder contracts and secretes bile through the cystic duct into the common bile duct and reaches the duodenum via the sphincter of Oddi.<sup>(3)</sup> (See Figure 1 following page)

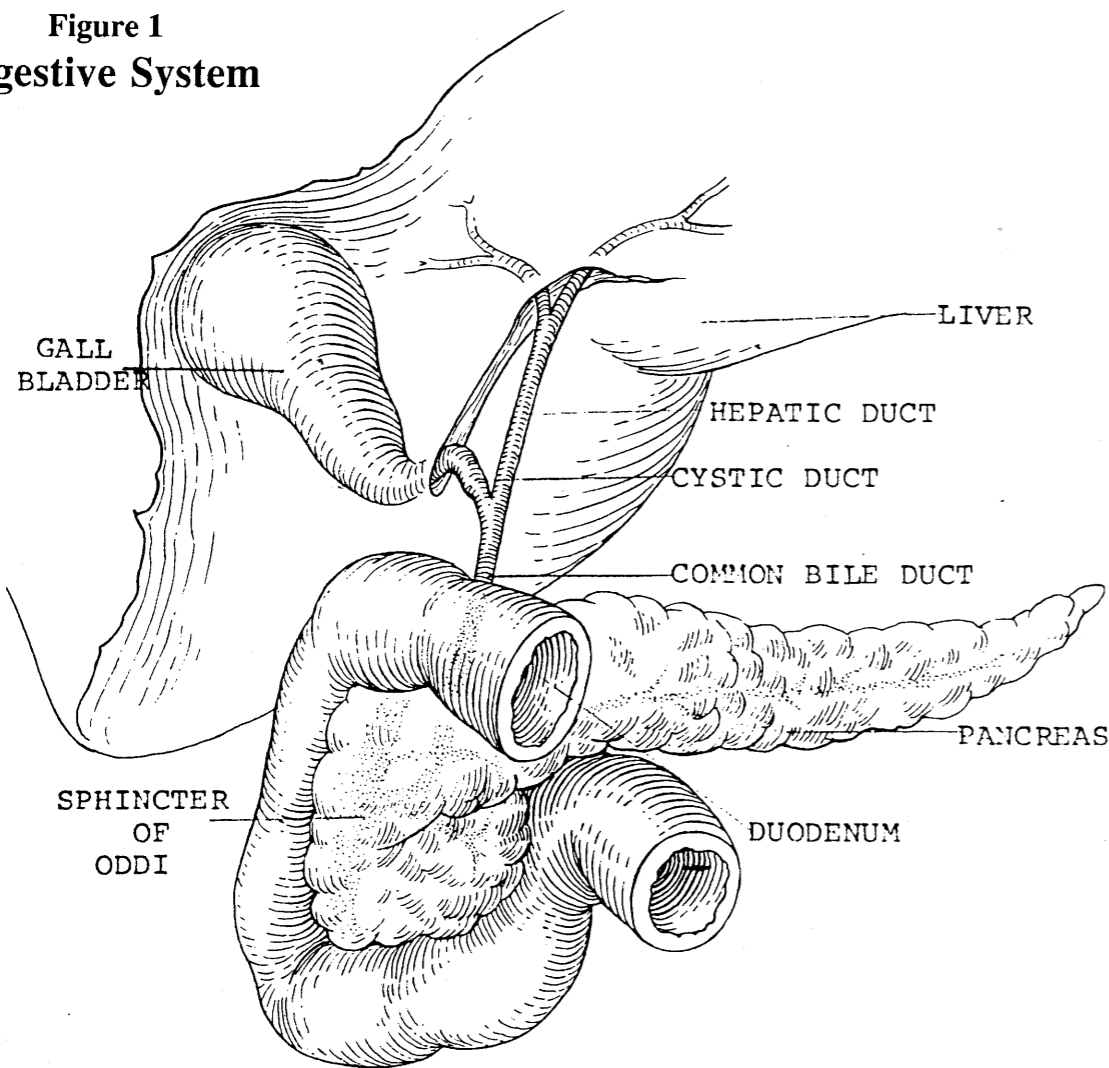
### Abstract

Traditional gall bladder surgery results in an abdominal incision requiring management of pain, possible ileus, a hospital stay of 5 to 7 days, and a six week recovery period. This type of surgery carries with it the risks of both surgery and anaesthesia and can have a high monetary cost for both the patient and the hospital. Laparoscopic cholecystectomy results in four, 1 to 3 cm incisions, that appear to produce less pain and no ileus. Hospitalization is 24 to 48 hours and complete recovery and return to work can occur within two weeks. This surgery is a safe and economical alternative to traditional surgical methods.

Indications for cholecystectomy, the removal of the gall bladder, are the formation of stones (cholelithiasis) and the symptoms of acute or chronic infection (cholecystitis). Cholelithiasis, the production of stones, can obstruct the common bile duct, resulting in jaundice. Patients with cholecystitis may present with symptoms of an acute infection, requiring im-

mediate surgical intervention or chronic infection, resulting in surgery when symptoms improve.<sup>(3)</sup>

**Figure 1**  
**Digestive System**



tomy. A full blood work up is required including a complete blood count, prothrombin time and partial thromboplastin time, electrolytes, random glucose, creatinine, conjugated and unconjugated bilirubin. Gamma Glutanyl Transferase (GGT), Alkaline Phosphates (ALP), Aspartate Transaminase (AST) and Alanine Transaminase (ALT) are done to test liver function and the possibility of a stone obstructing the common bile duct.

**Preoperative assessment**

Candidates for this procedure are selected according to strict criteria. Patients should be relatively healthy and a candidate for general anesthesia. Contraindications are obesity, evidence of acute chole-

cystitis, or the presence of multiple stones and jaundice. Previous abdominal surgery is also a contraindication due the possibility of adhesions.<sup>(4)</sup> Only 30% of the patients requiring a cholecystectomy are eligible for laparoscopic cholecystectomy.

Preoperative tests for laparoscopic surgery are similar to those required for traditional cholecystec-

A preoperative ultra sound of the gall bladder is essential to assess the size of the gall bladder, the presence of stones, and the size of the common bile duct. An enlarged duct may indicate an obstruction, a contraindication for laparoscopic surgery.<sup>(4,5)</sup> A cross and type for the two units of blood, routine urinalysis, chest x-ray and electrocardiogram complete the preoperative investigation.

Preoperative teaching is essential. For Mount Sinai Hospital this is a new procedure, and informed consent includes the possibility of the surgery being converted to the traditional laparotomy.

Patients must be educated to understand that post-operative symptoms will be less severe and of a different type, i.e., less abdominal pain but more shoulder pain. Deep breathing and coughing is important as is early mobilization. Due to the decrease in pain, this is easier for patients to achieve.

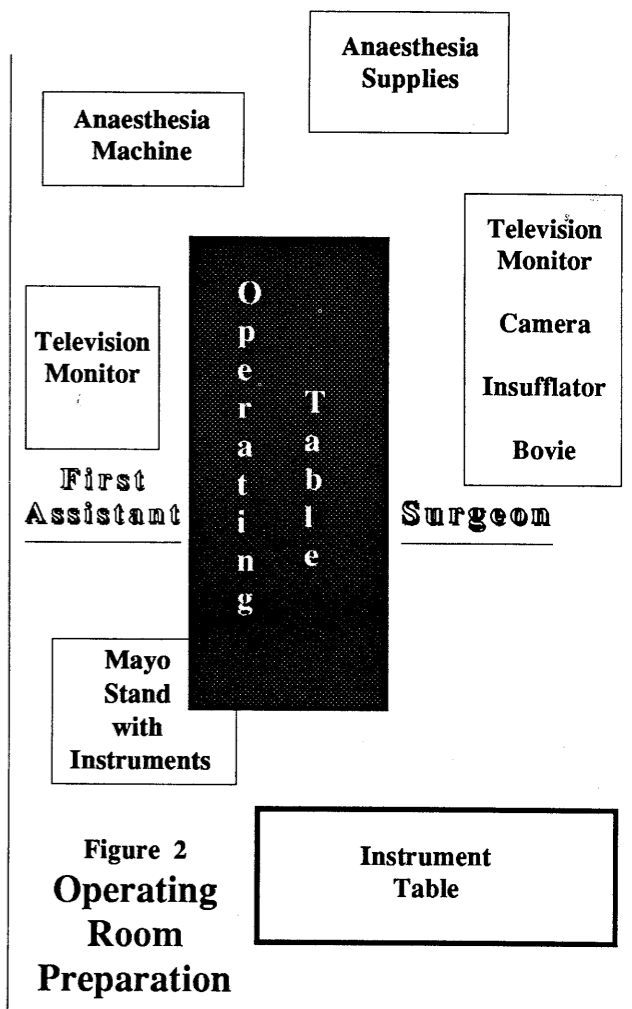
The surgeon, first introducing the procedure, inserviced the nurses on the surgical unit receiving the patient. Recently, I have been approached by other units, including recovery room, to set up multiple inservices so that everyone can become familiar with "bandaid gall bladder surgery."

**Operating room preparation**

Preoperatively, the circulating nurse must check the equipment required for this surgery in order to promote patient safety and avoid intraoperative delays due to equipment failure. The equipment consists of two television screens, a camera that attaches to the telescope, an insufflator, a light source and an electrosurgical unit.

At Mount Sinai, we use a specially designed insufflator that has two delivery modes - one litre per minute and automatic. The carbon dioxide tank must be full, as up to 175 litres may be used at one time. There is no reserve or internal tank on this insufflator. Light is provided by a Xenon light source, which must be checked for bulb potency. These bulbs are very costly and should be changed by biomedical engineering. The integrity of the camera lens must be checked and the camera is white balanced for color clarity. Two televisions are necessary and are positioned in such a way that both the surgeon and first assistant have a clear view of a television screen. (See Figure 2)

At Mount Sinai Hospital, the insufflator, camera, one television monitor and electrical surgical unit (ESU) are positioned behind the primary surgeon, in full view of the first assistant. The first assistant can



**Figure 2**  
**Operating Room Preparation**

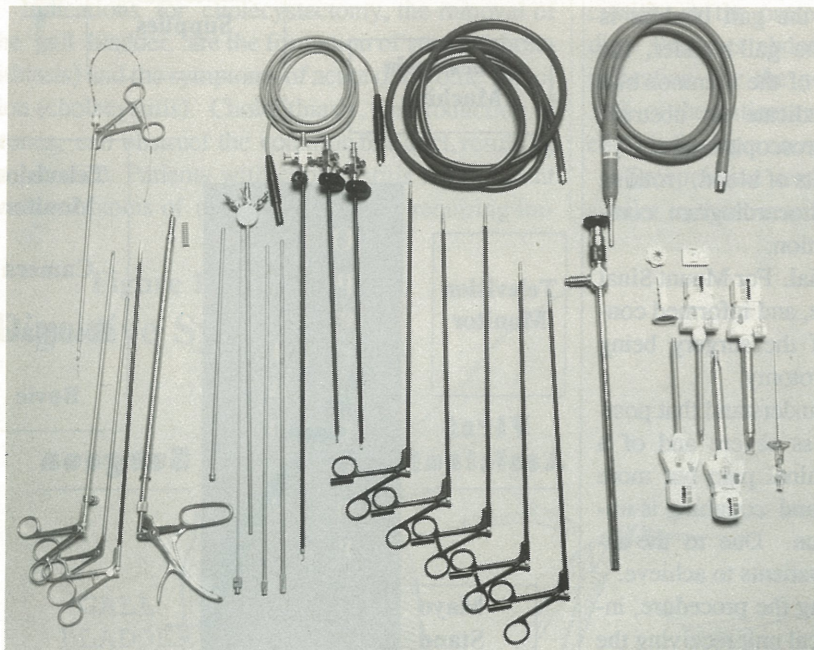
visualize not only the monitor, but also the insufflator and ESU settings. It may be necessary to have adaptors available for the ESU to facilitate the use of a cauterizing instrument.<sup>(4)</sup>

**Intraoperative procedure**

Anaesthesia monitoring includes EKG, blood pressure, and O2 saturation. The patient is anesthetized, intubated, and the endotracheal tube secured. A nasogastric tube is inserted to decompress the stomach. A catheter is inserted to empty the bladder and an electrosurgical grounding pad is applied.

The patient is placed in the supine position. A sand bag is placed under the left scapula, which rolls the liver to the right side and exposes the gall bladder. The patient's skin is prepared with betadine, painted nipples to thigh, table edge to table edge. Draping must be adequate to permit performance of a traditional cholecystectomy in case the laparoscopic procedure must be abandoned.<sup>(4,5)</sup>

The telescope head is draped in a sterile covering



**Figure 3** - Instrumentation for laparoscopic cholecystectomy. Verres needle is shown at the far right. The next four instruments are trocars.

so that the circulating nurse may apply the camera head. The light cable is attached to the telescope. Connecting tubing is attached to the insufflator and left for later attachment to a trocar. Electrosurgical cables, one adapted for the cholecystectomy equipment and one for a hand-held cautery, are secured to the draping. Suction tubing and irrigation tubing usually go to the head of the bed.

### Instrumentation

The surgeon begins by inserting a Verres needle in a one cm stab hole below the umbilicus. (See Figure 3) A drop test is performed to assess that the needle is in the abdomen.<sup>(6)</sup> The peritoneum is filled with carbon dioxide at the rate of one litre per minute up to six litres. The needle is removed and a 10 mm trocar is introduced. The telescope with the attached camera head is introduced via the trocar and used to inspect the abdomen.

Insufflation is maintained by switching the machine to automatic which maintains the abdominal pressure at 12 to 14 mm Hg. An 11 mm trocar is inserted under visualization in the mid line, two finger breadths below the xyphoid. This portal is used for the dissecting and cauterizing equipment. Two 5 mm trocars are introduced in the mid clavicular area and anterior axillary line through which graspers can retract, expose, and manipu-

late the gall bladder. A sleeve, with the appearance of a screw, helps to hold these trocars in place and prevent slippage during instrument manipulation.

Mount Sinai Hospital is currently using disposable Verres needles and trocars. They are believed to provide a constant degree of sharpness. The trocar has a safety sheath that protects the tip from puncturing nearby organs. The surgeon identifies, dissects and isolates the cystic duct and artery. The duct and artery are ligated with a clip.

An alternative method<sup>(5)</sup> of ligation is the use of endo-loops. The gall bladder is separated from the liver bed using the ESU in the blend mode.

Before the final separation of the gall bladder from the liver, the liver bed is inspected for bleeding. Copious amounts of normal saline, delivered under pressure, are used to irrigate the abdomen. If the gall bladder proves to be large, an aspiration needle may be introduced to decompress the gall bladder. The gall bladder is then separated from the liver bed and removed via the umbilical incision. The gall bladder is held by grasping forceps while the telescope is removed and reintroduced in the upper incision. A grasper in the umbilical incision brings the gall bladder to the abdominal wall where it is easiest to remove through the single layer of fascia. If stones are too large to permit removal of the gall bladder sac, the incision may be extended 2 cm and stone forceps used to crush the stone and remove fragments.<sup>(4,5,6,7)</sup>

The abdomen is inspected for haemostasis. The carbon dioxide is permitted to escape, the sheaths are removed, and the incision is closed with 2-0 Prolene for peritoneum and fascia and 4-0 Dexon in a subcuticular fashion for skin. The four small incisions are dressed with 1/4" Steristripes.

Documentation is conducted in the usual manner. Names of the surgeon, assistants, anaesthetists and nurses, as well as the names of other people present in the OR for observation are recorded. The serial number of the ESU is recorded as well as positioning, prepping solution, and comments. The pa-

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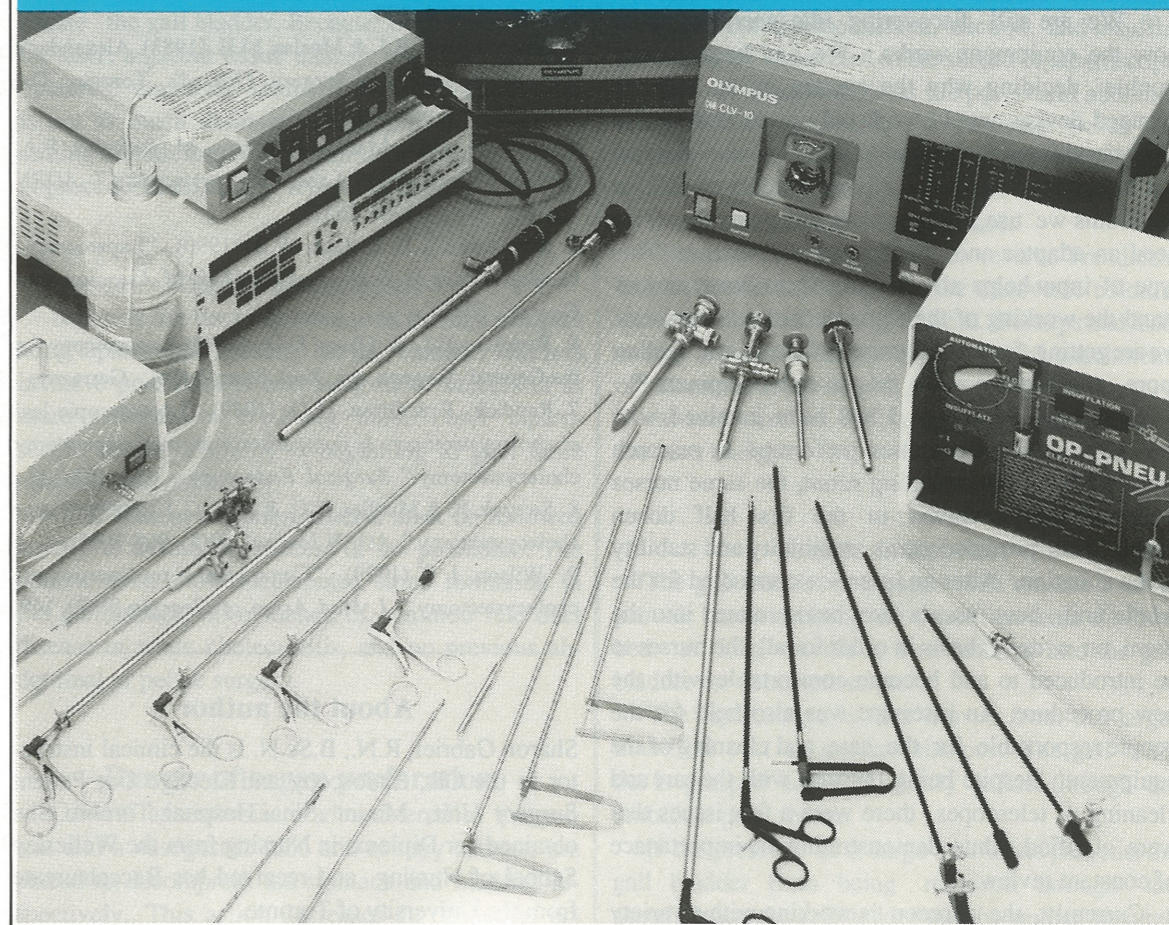
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tient is then transferred to the post anaesthetic unit.

Recovery from anaesthesia is the same as for the traditional cholecystectomy. The signs and symptoms observed are the same for any abdominal surgery. The patient is returned to the surgical unit.

Currently, if the patient is the first surgical candidate of the day, the patient is permitted clear fluids in the late afternoon and ready for discharge the following day by early afternoon.

### Nursing implications

New procedures are a difficult time of adjustment for both surgeons and nurses. The similarity between gynecological laparoscopy and laparoscopic cholecystectomy makes instruments and equipment somewhat similar. The support and continued presence of detail representatives of various companies has helped the learning process of both physicians and nurses. After eight of these procedures and a technical inservice, the nursing staff is now totally responsible for equipment set-up and instruments. However, the sales representatives are only a phone call away.

We are still discovering idiosyncrasies about how the equipment works. We had been having trouble deciding why the cautery cable, a single pronged device, would work only in certain rooms. One circulating nurse new to this procedure pointed out that there were two different models of ESU in the rooms we use. For one unit, she pointed out, we need an adaptor and, for another, we do not. This type of input helps all the nurses to better understand the working of the equipment. In this process, we are getting faster and more efficient, and feeling more comfortable with set-up and equipment.<sup>(6)</sup>

As clinical instructor, I had been involved with the first cholecystectomies performed in research labs. Once in the operating room, the same nurses were initially involved in the first half dozen cases. This provided some continuity and stability to the situation. After an inservice conducted for the whole unit, new nurses are being rotated into the room on a daily basis in order for all the nurses to be introduced to and become comfortable with, the new procedure. An inservice was also held for the people responsible for the care and cleaning of the equipment. Despite being familiar with the care and cleaning of telescopes, there were a few issues that were clarified, thus demonstrating the importance of constant review.

Currently, the surgeon is working with a variety

of instrumentation, which can change from case to case as availability changes. This equipment is currently so in demand that there is a six month to one year back order situation. The disposable equipment is also in great demand and becoming available from a variety of sources.

### Conclusion

Laparoscopic cholecystectomy is a viable option to traditional cholecystectomy for a select population. The decrease in post operative pain and ileus, and decrease in hospitalization and recovery time make it an attractive alternative both to patients and to hospitals in these times of limited resources. ■

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### About the author

Sharon Gabriel, R.N., B.Sc.N. is the clinical instructor in the OR, Endoscopy and Elective Out Patient Surgery Unit, Mount Sinai Hospital, Toronto. She obtained her Diploma in Nursing from the Wellesley School of Nursing and received her Baccalaureate from the University of Toronto.

## Laser Surgery

# Laser laparoscopic cholecystectomy

In the "traditional" removal of a diseased gallbladder (cholecystectomy), the required main incision (a right upper quadrant incision) requires that the patient, because of the pain associated, not move or breathe deeply after the procedure. This could complicate the recovery process if infection or respiratory problems become evident.

The CO<sub>2</sub>, contact Nd:YAG, argon, and frequency-doubled YAG lasers have been used to excise the gall bladder. Because of the precision of the laser, adjacent tissue damage is minimized. Post-operative drains are removed earlier because there is not as much drainage resulting from the laser's sealing effects. Recovery is similar to the conventional procedures except for reports of quicker recovery.

### Laser laparoscopy

Recently the laser has been used through an operating laparoscope to excise the gall bladder. This less invasive procedure is becoming more successful as more refinements are being made. Laser laparoscopic cholecystectomy is beginning to gain more attention and popularity.

The patient selection criteria must be followed strictly to ensure the success of the procedure. The patient must show documented stone formation in the gallbladder, no evidence of common bile duct disease or acute cholecystitis, and no previous abdominal or pelvic surgery.

### Danger of organ perforation

General anaesthesia is administered to the patient and a nasogastric tube and urinary catheter are placed to decompress the stomach and bladder, respectively. This action decreases the chance of or-

gan perforation during the laparoscopic procedure.

The patient is placed in the Trendelenburg position (head down) to allow the organs to move towards the chest. A small umbilical incision is made and an insufflation needle inserted to fill the abdominal cavity with CO<sub>2</sub> gas. The needle is removed when the insufflation appears to be adequate. A trocar and sheath are inserted and the trocar removed to allow introduction of the laparoscope through the sheath. The light cord, video camera, suction, and insufflation hose are connected to the sheath or laparoscope.

The physician examines the pelvis and abdomen and identifies landmarks for reference. Other stab wounds are made at strategically placed positions to allow for the passage of other necessary instrumentation during the procedure.

The patient is then placed in reverse Trendelenburg (feet down) to allow the transverse colon to move away from the surgical field. Forceps and laser energy are used to dissect any peritoneal attachments or adhesions from around the cystic duct or artery. These structures are doubly ligated and divided with the laser energy.

### Laser dissection

The gall bladder is grasped with tension used to provide traction during the dissection from the liver bed. A long needle is then inserted into the gall bladder for decompression.

The laparoscope is then moved from the larger umbilical port to another side port. The gall bladder is grasped and then gently pulled through the umbilical port sheath.

If the presence of a large gall-stone prevents the gall bladder from being removed through the sheath, then the gallbladder can be pulled through

the umbilical incision following sheath removal.

The liver bed is hemostatically coagulated with laser energy and then irrigated with an antibiotic solution. Before the completion of the procedure, the abdomen is decompressed by gentle pressure to remove the insufflated gas. Many times a post-operative drain is not needed. All skin incisions are then closed in the traditional manner.

Post-operatively, the patient may experience shoulder pain, especially if any of the insufflation gas escapes into the peritoneal space. This can be controlled with mild analgesics. Patients are usually discharged on the first or second post-operative day. Most will be able to return to unrestricted work within one week following the procedure.

### Advantages

The laser offers distinct advantages over conventional methods when used to remove the gall bladder through the laparoscope. Patients are able to be discharged from the hospital sooner and return to work more quickly, have an easier post-op course, and have a better abdominal cosmetic appearance.

### Disadvantages

The main disadvantage associated with laser cholecystectomy is that the physician must become a skilled laparoscopist. The potential complication of accidentally impacting the intestine with the laser energy must be avoided during the laparoscopic procedure. Bleeding also is harder to control through a laparoscope than it is through traditional cholecystectomy techniques.

### Conclusion

As the general surgeon becomes an expert in laser endoscopy, less open or invasive procedures will be required to incise or excise internal pathology. The laser will then become a valuable tool and its true potential will be realized. ■

### Editor's Note...

The preceding article on laser cholecystectomy was abridged from the publication "Lasers - The Perioperative Challenge" by Kay Ball, R.N., B.S.N., M.S.A., formerly Administrative Director, Grant Laser Center, Columbus, Ohio. Published by The C.V. Mosby-Yearbook Company, Toronto, 1990.

## Laparoscopic Laser Cholecystectomy

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By Christopher J. Daly, M.D.

This comprehensive video covers the instrumentation for laparoscopy and the Nd:YAG laser, the video requirements, the illumination system, the operative set-up, safety precautions, surgical techniques, anatomical variants which might be encountered, post-operative care of the patient and the training of the surgical team.

This video, approximately 43 minutes, is available in VHS (\$200.00) and U-matic (\$235.00).

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## Medical Laser Instruction Materials

A training and reference publication entitled "Bronchoscopic Laser Resection Manual" is available. This 151-page, extensively illustrated new publication was compiled from the contributions of a number of laser medical/surgical experts.

Its contents include the Neodymium:YAG laser, tracheo bronchial anatomy, preoperative investigative findings, the physical requirements for a bronchoscopic laser resection: the instrumentation, the staff or surgical team and the premises. It also includes a section on the techniques of safe laser surgery, and cicatricial tracheostenosis.

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Telephone/FAX (519) 471-0300

Note: Biomedical Communications have a number of other educational materials on laser surgery that can be enquired about:

- Books and training manuals on medical laser use
- Slide sets for teaching/self-instruction on lasers
- Teaching videos and self-instruction on medical/surgical laser use
- Patient information pamphlets on medical lasers.

# What it takes to be a leader

A basic function of a good leader is to inspire people to their best efforts. Leaders know what should be done and how to get people to do it.

A person may be a good manager but not necessarily a leader. The manager will accept responsibility when it's given - the leader will not only accept responsibility but will take it when required.

Dwight D. Eisenhower described leadership as:

*"the ability to get a person to do what you want him to do, when you want it done, in a way you want it done, because he wants to do it."*

What, in fact, is leadership? Leadership, according to one point of view is: a) a function of "The Group"; b) an interaction between people - not based on any individual characteristic, but upon the relationships between certain members and the others in a group.

A group exists only so long as it has a goal(s) and is being relatively successful in moving towards its goal(s).

"Leaders" are those members who are "perceived" by the other members of the group as being effective:

- a) in setting up the group's goals
- b) in maintaining the group and moving it towards its goals.

Since groups exist to satisfy the needs of members it therefore becomes the role of the one(s) perceived as leader(s) to be effective in assisting the group and its members to achieve these satisfactions. One thing has to be made clear - the expectations of the group as to the goal(s) and of the leaders.

### Types of Leaders.

All groups have both; a) a task leader and b) a social or maintenance leader, (not social in the way of a 'party'). Both types of leadership may be perceived to come from the one leader, though this may not always be the case, in which case two leaders will emerge. It is certain, however, that a group will find a leader for

both kinds of needs, or break down as an effective group.

Leadership is dependent on effective communication between the leader(s) and the group.

### Key Points to Good Leadership:

1. Respect the personal integrity of individuals
  2. Recognize efforts and accomplishments of others
  3. Know yourself
  4. Encourage group participation and awaken enthusiasm
  5. Have a sense of humor
  6. Have the ability to 'get things done' (a leader doesn't shy away from responsibility or hard work; and doesn't quit when faced with unexpected obstacles)
  7. A leader makes decisions, sometimes they turn out right and sometimes they turn out wrong, but either way the decision was made.
  8. Ability to cooperate, be flexible, listen to others
- The person with leadership responsibility might ask:- What am I assuming about capabilities and motives of people?
- What impact do I have upon others - how do they react to my leadership?
  - To what extent do I have confidence in, and feel comfortable with myself?
  - How willing am I to be open with, and listen to, other people?
  - To what extent do I check my impressions against facts before reaching conclusions?

### Phrases that leaders should use:

"I admit I made a mistake"; "You did a good job"; "What is your opinion?"; "Thank you" and the one most important word, "We".

I wish you all a very Merry Christmas, a prosperous, healthy life, and career fulfillment for the coming new year - 1991. Gloria Stephens, ORNAC President.

## Two Canadian OR nurses receive recognition

### *Heritage of Service Award*

The Alberta Association of Registered Nurses annually presents the *Heritage of Service Award* to nurses who have made a significant contribution to nursing during their careers.

In 1990 the recipient of this Award was Margery Ensminger, operating room nurse at the Medicine Hat Regional Hospital.

Margery's contributions to operating room nursing extend back to 1958. She now specializes in ophthalmic surgery and, because of her expertise and extensive knowledge of the field, is often called upon as a resource person.

### **Avid promoter**

Marg, cited as an outstanding role model, is a strong believer and promoter of standards of operating room nursing practice.

She has contributed to O.R. nursing at the local, regional, provincial and national levels. She has served as president of the O.R. Nurses Association of Alberta, as the official photographer for the

### *Award of Excellence in Nursing Education*

Every year at its Annual Dinner, RNABC (the Registered Nurses Association of British Columbia) honour individual nurses for their achievements in professional nursing. The recipient of one of these awards, the *Award for Excellence in Nursing Education for 1990*, went to Gloria Stephens, Operating Room Instructor and In-

Operating Room Nurses Association of Canada, and currently is serving as secretary of the 12th National Planning Committee responsible for the next National ORNAC Conference scheduled for Banff, Alberta next spring.

### **Achievement award**

In 1988, Margery was recognized by her community when she received the "*Women of Achievement Award*" from the Medicine Hat Business and Professional Women's Club. Due to her participation at all levels of operating room nursing activity, Marg is well known for her commitment, and respected by operating room nurses throughout the country. ■



**Margery Ensminger**

service Co-ordinator, St. Pauls Hospital, Vancouver. Gloria has also been actively involved with the Operating Room Nurses Association of Canada. However, her involvement in nursing education goes back beyond her involvement with ORNAC activities.

### **National standards**

In 1974, she developed the curriculum of the Post Graduate Oper-



**Gloria Stephens**

ating Room Nurses Program for B.C. The quality of this program is still recognized both provincially and nationally. It was because of her work in this area that she was chosen to head the committee to establish O.R. nursing standards of practice for nurses across Canada; and for the past several years, she has been instrumental in promoting, writing and publishing these national operating room nursing standards.

Because of her reputation as an educator, Gloria has been a frequent speaker at conferences and seminars at the local, national and international level.

### **Founding member**

She is a founding member of the B.C. Operating Room Nurses Group (1964), and served as its president from 1972 to 1974. Currently, she is president of ORNAC. Her contributions to nursing education have won her several provincial and national awards: 1974: *RNABC's Innovative Nurses Award*.

1987: *RNABC's Award of Excellence - Nursing Practice*;

1988: *ORNAC's Isabelle Adams Award for Excellence in Perioperative Nursing*. ■

### **Recommended Standards**

The Recommended Standards for Operating Rooms in Canadian Hospitals, as established by the Operating Room Nurses Association of Canada, are available for sale.

**Recommended Standards @ \$12.00 per copy.**  
**Recommended Technical Standards @ \$20.00 per copy.**

Cheques or money orders should be made payable to the Operating Room Nurses Association of Canada. Postage and 7% G.S.T. will be added. Direct orders with your return address to:

**Shirley Hemerling, Operating Room  
Kelowna General Hospital  
2268 Pandosy St., Kelowna, B.C. V1Y 1T2  
Telephone orders: (604) 861-5945**

### **"Operating Room Nurse Day" gets celebrated in ORs across Canada**

On November 14, operating room nurses from across Canada marked the first ever official "Operating Room Nurse Day." Recognized, sanctioned and promoted by the Operating Room Nurses Association of Canada, this one day was set aside to give recognition to perioperative nursing in Canada.

On this day, the public as well as other health care professionals were invited beyond the "sterile door" to view perioperative nurses in action and examine the highly technical equipment the OR nurse of today is required to understand and maintain. This special day was commemorated with posters, displays and demonstrations in ORs across Canada.

### **Misconceptions**

Gloria Stephens, President of ORNAC explained that people tend to believe that OR nurses just pass instruments to physicians. This and other misconceptions the public and other health care professions have of today's operating room nurse needs to be corrected. "OR nurses have the responsibility to change the erroneous perception that they do not participate in real patient care," Stephens said.

"There's a lot of versatility in the area of perioperative nursing, and that's why there is such a low turnover rate in OR nursing... It's a very rewarding field, and with the "Operating Room Nurse Day," we were able to demonstrate this." ■

## Organizers putting finishing touches to Banff National OR Nurses Conference

Next year, from May 12 to 17, at the Banff Springs Hotel, operating room nurses from across Canada will be gathering for the 12th National Conference of Operating Room Nurses.

The theme for the 1991 version of the conference will be "Moving Mountains." However, two timely sub-themes will be added (1) "Mastering Skills," and (2), "Maturing Professionally."

At the beginning of the last decade, the Operating Room Nurses Association of Canada came into existence. The association grew, evolved and flourished. It became a viable and constructive national entity for operating room nurses across Canada.

Now, as the organizers point out in the 1991 logo, "it's time for the association and its membership to mature professionally and become more masterful in the pursuit of the necessary skills and objectives required to meet the challenges of the 90s."

Details of the 12th National Conference will be appearing in future issues. In the meantime, operating room nurse delegates and prospective exhibitors wishing information can contact:

### **For Delegate Registration:**

Carol Rolfe, Registration Chairman  
Banff '91, Box 8218

Edmonton, Alberta T6H 4P1 (403) 343-2519

### **Exhibitors contact:**

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## Laser safety update...

- Lasers when not in use
- Side shields and ventilation slits
- Designer eyeglasses and laser safety
- Soft contact lenses and laser safety

The Occupational Safety and Health Administration (OSHA) in the United States, which sets the regulations for medical/surgical laser safety in the United States, recently cited and fined a hospital for laser safety violations.

Although there have been no recently documented laser safety violations in Canadian hospitals, in the United States, OSHA has sent a clear message to hospitals that any laser safety infractions are to be considered a serious problem.

#### Staff complaints

The hospital in question came to the attention of OSHA officials when they got wind of nursing staff complaints about the laser plume. Measurements of formaldehyde and cyanide levels within nurses' breathing zones turned up negative. This was the gist of the original complaint.

However, OSHA officials began looking at other elements of the hospital's laser program. The violations they found are of significance to laser safety committees everywhere.

#### Violation #1

This violation concerned the variable wattage CO2 laser in a particular operating room. It was found that nurses and anaesthetists were exposed to burns of the

eye and skin due to inadvertent activation of the laser's electrical control system.

OSHA recommended that by locking-out the electrical control panel and removing the key when the laser is not in use is a feasible and useful method to control the hazard.

In this violation, the starting key was left in the laser when the unit was not being used, thereby increasing the possibility that staff members could turn on the laser accidentally and without their knowledge.

Even though the laser checklist at the hospital in question did include a step for removal of the key, it was not done.

**Fine for infraction: \$300.**

#### Violation #2

During surgical laser procedures, some nurses wore corrective eyeglasses and did not attach protective side shields. They were thus potentially exposing their eyes to direct exposure to the laser beam.

#### Ventilation slits

Also, the laser-specific protective eye wear provided to the laser staff in this O.R. had side shields with built-in ventilation slits. These slits are another potential entry point for the laser beam.

According to OSHA, the above

safety problems could be rectified by providing eye wear which "has adequate lenses and side shields to protect employees' eyes from inadvertent exposure to the laser beam."

Again, the hospital in question did provide laser goggles and side shields that were acceptable by OSHA standards. The problem centred around nurses who wore corrective eyeglasses during surgery. Side panels were made available to them.

#### Designer eyeglasses

However, the side panels that were purchased for the laser staff did not fit designer glasses, which some nurses wore.

OSHA's response: they don't care what the nurses wear - full goggles or side shields - as long as they wear something that adequately protects them from the laser. **Fine for infraction: \$650.**

#### Soft contact lenses

Not mentioned by OSHA in its laser safety citations to the hospital, but recommended to the hospital, was that nurses be prohibited from wearing soft contact lenses during laser surgery.

According to the National Association for the Blind (in Canada the Canadian National Institute for the Blind - CNIB), the soft lenses, because they are porous, are prone to absorb hazardous airborne chemicals that have been identified in the laser plume. ■

Edited for publication from *Clinical Laser Monthly*, May, 1990



## Lasers in plastic surgery not necessarily more advantageous than traditional surgery

It isn't necessarily easier to recover from cosmetic plastic surgery when it is performed with lasers than by traditional procedures, and the American Society of Plastic and Reconstructive Surgery (ASPRS) recently issued a position statement to set the record straight.

### Fewer side effects

Recent claims, especially in the U.S., that lasers cut down on the side effects associated with cosmetic surgery should be viewed with skepticism, the ASPRS statement warns.

In fact, the risk of pain, swelling, bruising and other side effects may actually be greater for those who go under the laser versus the knife, according to the ASPRS position statement.

The statement also warns that laser procedures, in cosmetic plastic surgery, may cause more tissue damage than a scalpel - and it can take up to 25% longer to perform.

"No surgery, no matter what the technology used, can eliminate all side effects and possible complications," Dr. Joel Noe, professor of plastic and recon-

structive surgery at Harvard Medical School said in the statement.

"Lasers have their own potential set of risks and trade offs, including high cost," said Dr. David Apfelberg, past president of the Association. "It is the philosophy of the association that new technology such as lasers should not be widely used until properly conducted studies have shown it to be an improvement over standard techniques for a given procedure."

In a recent study quoted in the statement, blepharoplasty (plastic surgery on the eyelid) was performed in ten patients using a laser on one eye and conventional surgical technique on the other. One hour after surgery, an independent clinical observer was unable to detect any difference between the scalpel-performed operation and the laser-performed one in any of the patients.

### Observable differences

Also, the patients in the study, none of whom were told which eye received laser treatment, reported little if any difference in pain, swelling, bruising or scar appearance. ■

## When feasible, endotracheal tubes in laser surgery should be avoided due to safety factors

There is no such thing as an endotracheal tube that is safe for use with all types of lasers. This is the contention of Dr. Marvin Fried, an otolaryngologist at Harvard Medical School in Boston.

Speaking at the annual meeting of the American Academy of Oto-

laryngology-Head and Neck Surgery meeting in New Orleans recently, Fried said there was nothing more catastrophic than a device in the airway that ignites.

While the use of an endotracheal tube can often be avoided during laser surgery, Dr. Fried said "there

are times when you can't get around the issue, as when general anaesthetic is being used."

The central point made by Dr. Fried is that a tube that is appropriate for use with one laser wavelength does not necessarily provide adequate protection with another wavelength, and no tube addresses all surgical concerns by being absolutely nonflammable, flexible and inexpensive.

"There is no material now that can protect the cuff distally, that will inflate, hold saline, and be impervious to any laser wavelength."

Dr. Fried said he likes all-metal endotracheal tubes, and while he noted they can possibly conduct electricity, they are probably the safest. He also likes wrapped rubber endotracheal tubes, but warned that the problem is still there, as no company makes a wrap for endotracheal tubes that is medical grade and laser safe. ■

### Medical laser manufacturers and distributors...

The *Canadian Operating Room Nursing Journal* intends to publish a listing of medical laser manufacturers/distributors that operate in Canada. This listing will include:

- manufacturers of medical lasers;
- distributors of medical lasers;
- manufacturers and distributors of laser-related devices/auxiliary laser equipment, etc.

These companies are asked to submit an information brief about their company, including any information they consider relevant. This information should be sent to:

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- A copy of the **ANSI Z136.3 Standards**, standards which are used for hospital accreditation in the United States.
- **Plan for Success**, a step-by-step primer for establishing a quality laser program in a hospital or clinic.
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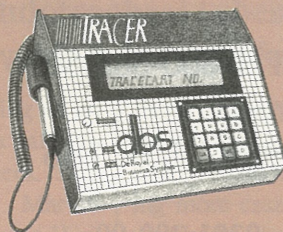
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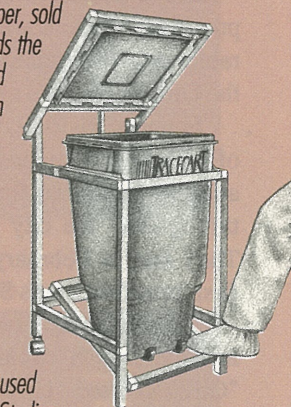
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<sup>1</sup> Studies available upon request.

## Greater Toronto OR nurses celebrate 30th anniversary

The Operating Room Nurses Association of Greater Toronto (ORNGT) celebrated the 30th Anniversary of their founding this past summer. Past presidents, founding members, former members, executive/board members, along with current members from the Greater Toronto area, friends and guests, were on hand to commemorate three decades.

Current president, Diana Jorgensen, welcomed the celebrants, many of whom were from ORNAC and the OR Nurses Association of Ontario.

In her address, Ms. Jorgensen provided listeners with a memorable and entertaining history of the Greater Toronto organization.

Founded in 1959, the pioneers of the group consisted of 24 operating room nurses from hospitals throughout the city of Toronto.

They met in February, 1959. The convenor, also its first president, was Sister Bernadette Naughton.

This first executive was elected on May 4, 1959, and after much debate, they called themselves the "O.R. Nurses Group of District 5," with annual membership dues stipulated at \$1.00.

In 1964, the organization became the "Operating Room Nurses Association of Greater Toronto.

### Provincial support

Three decades have passed since the inaugural gathering in 1959. There are now more hospitals represented in the membership of 1990 than there were members in 1959. It is one of the largest O.R. nurses organization in Ontario, second only to the provincial association (ORNAO), which was formed in 1981. Much of the impetus, support, organizational expertise and momentum for the Operating Room Nurses Association of Ontario came from ORNGT membership.

Where will the ORNGT go from here? Diana Jorgensen wants the association to grow even stronger, "...to be a unified group with a voice loud enough to be recognized and strong enough to influence the decisions affecting their group and the peri-operative nursing practice."



### Past Presidents, ORNGT

**Standing (l-r):** Jane Cunningham (87-89); Donna Kaufmann (85-87); Diana Jorgensen; Jean Mitchell-Bain (75-79); Sharon Corbie (83-85). **Seated:** Joan Mansell (73-75); Anna Skorski (71-73), and Jean Watson (62-65). **Not in photo:** Sister Bernadette Naughton (59-61); Cherie Budzin McGuire (61-62); Helen Evans (65-67); Faye Trouten Blenkhorne (67-71); Jean Grice Lauer (79-81); Valerie Shirreff (81-83).

### Researchers are optimistic over vaccine that has been targeted for skin cancers

Researchers in the United States are optimistic about the potential of a new vaccine that targets melanomas, or skin cancers.

Dr. Jean-Claude Bystryn of the New York University School of Medicine said the vaccine, now in its fifth year of trials, had been successful on animals and had produced no adverse side effects in the humans that were involved in the trials.

### Immune response stimulated

Speaking at a recent symposium on skin cancers held in Sydney, Australia, Bystryn said that the vaccine had stimulated the immune response to melanoma in approximately half of the 200 human subjects used in the trials.

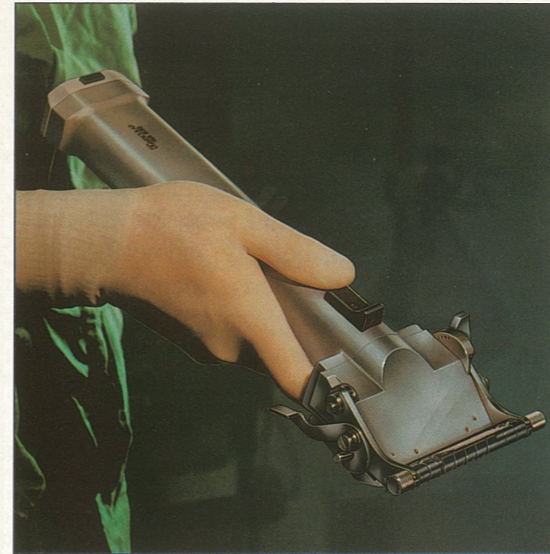
He said the vaccine would be used to prevent the recurrence of melanoma or to slow its development.

"In the long run, if the vaccine proves itself to be safe to use and effective, it will be used to prevent melanoma in high-risk individuals," Bystryn said.



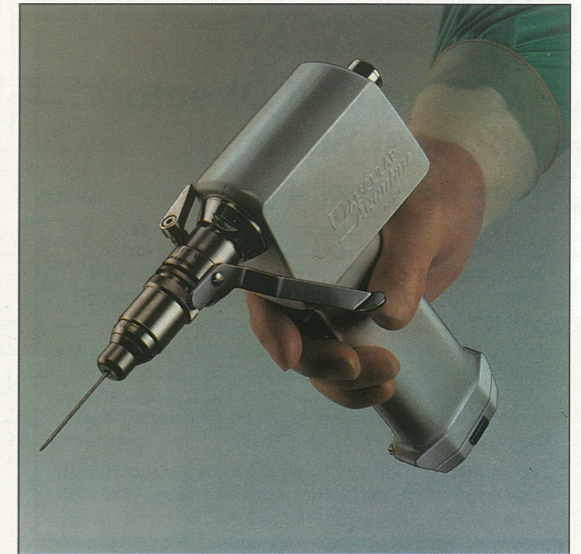
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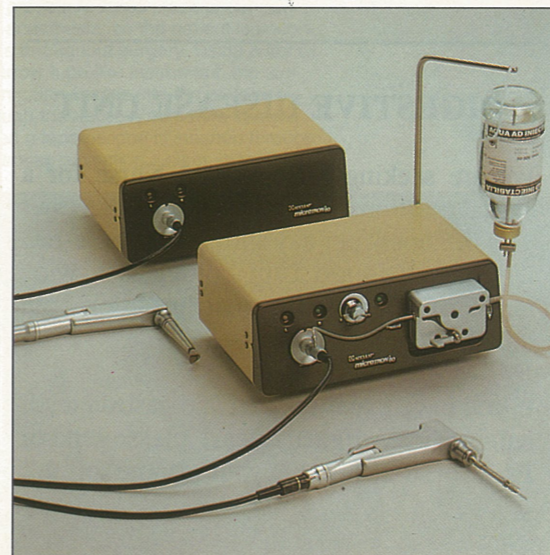
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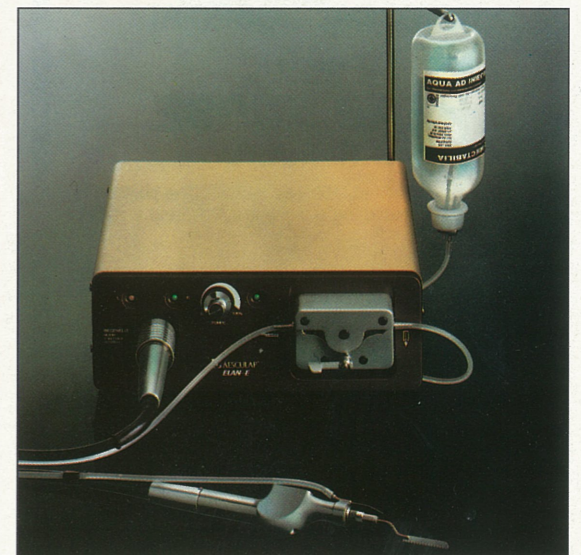
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## OPERATING ROOM NURSES

A challenging career opportunity is available to RN's with a background knowledge of O.R. techniques. This busy department handles 14,000 cases a year in its nine theatres and two cystoscopy rooms. We handle a variety of surgical specialties for the adult and paediatric populations. A Clinical Instructor is available for your educational needs.

We have full-time and part-time vacancies we wish to fill and are planning to build a decentralized O.R. relief pool for the purposes of weekend, holiday and peak coverage times. Qualifications include current O.R. experience or a graduate of an O.R. nursing program, current B.C.L.S. certificate and an Ontario Certificate of Competence.

Individuals requiring more information can contact Linda Hollin, Manager, Nursing Services - O.R. at 284-8131, Ext. 4062, or applicants may send or FAX (416-281-7417) your resume to Diane Ellis.

## DIGESTIVE DISEASE UNIT

We are seeking a Registered Nurse for a casual position in our DDU to work either 4 or 7.5 hours per day shifts. Our nine-bed Digestive Disease Unit provides a wide range of endoscopic procedures for both inpatients and outpatients.

If you have experience in the gastrointestinal medical/surgical areas, please send or FAX (416-281-7417) your resume to:

Diane Ellis, Recruiter  
Centenary Hospital  
2867 Ellesmere Rd.,  
Scarborough,  
Ontario  
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# Auto Suture® Laparoscopic System... Setting Standards in Safety

### An Increasingly Popular Choice

Laparoscopy has been used extensively in a range of gynecological procedures since the early 1960's. However, it had little use in general surgery until the development of the Auto Suture® Endo Clip™ applicator by United States Surgical Corporation in 1989. The Endo Clip™ made the gallbladder procedure practical through laparoscopy.

Today, the dramatic patient benefits of laparoscopic gallbladder removal are making this the procedure of choice among both surgeons and patients.

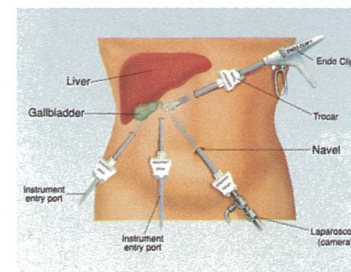
As a patient, you may have some concern that laparoscopic gallbladder surgery is a relatively new technique. However, the procedure has been so well received that thousands of people have already had their gallbladders removed laparoscopically and have been delighted with the results. ■

### How Laparoscopy Works

The procedure takes place under general anesthesia, so the patient is unconscious throughout surgery. Using a trocar, a narrow tube-like instrument, the surgeon gains access into the abdomen through the navel. A miniature camera called a laparoscope is inserted through the trocar, projecting a clear, magnified

image of the patient's internal organs on a video monitor. Since the incision is so tiny, the image on the video monitor provides the surgeon with a view of the inside of the abdomen as he operates.

Three additional trocars are inserted into the abdomen to accommodate miniature instrumentation. An electrocautery or lase is used to detach the gallbladder from the liver, and the surrounding structures are sealed with the Endo Clip™. The bile and gallstones are suctioned out of the gallbladder, deflating it like a balloon. Using special graspers, the surgeon gently removes the gallbladder through the navel. The four tiny incisions are closed with sutures or surgical tape. In several months the scars will barely be visible. ■



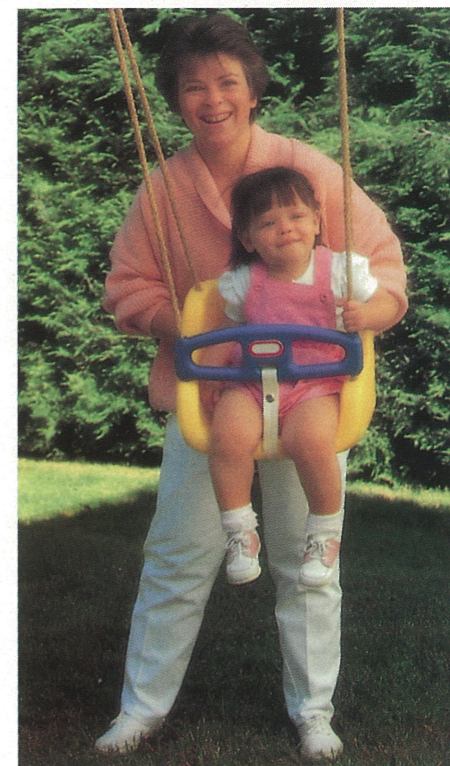
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## THREE DAYS AGO, THIS WOMAN HAD HER GALLBLADDER REMOVED

A remarkable new procedure  
shortens hospital stay  
and speeds healing



Berni Bova, shown with her daughter, Danielle, went home the day after her surgery and resumed normal activities within three days.\*

\*Data on file

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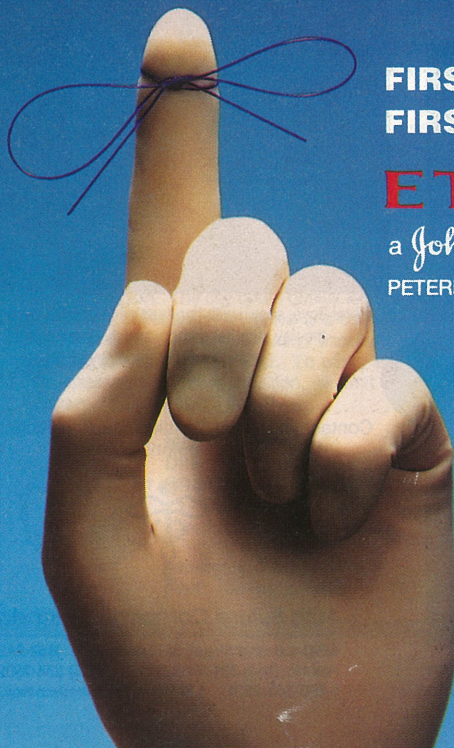
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