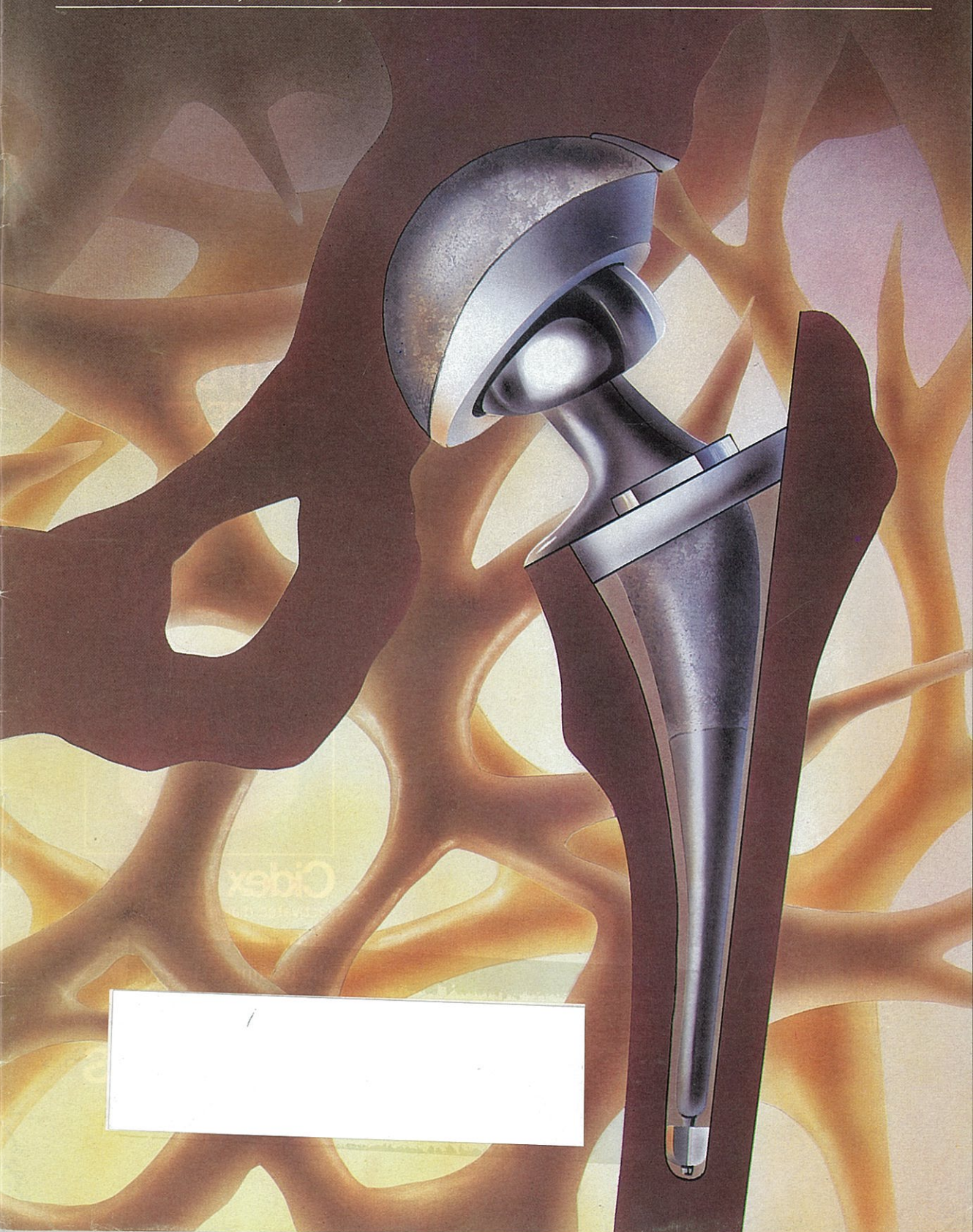


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Operating Room Nursing Journal

Volume 5, Number 6, December, 1987





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Feature Articles

04 Van Nes Rotationplasty: Perioperative Management

Van Nes rotationplasty is an alternative surgical management of osteosarcoma in adults. Originally, this unique procedure was utilized for children born with the congenital absence of the femur or a shortening of the femur. The ability of this procedure to salvage the lower limb is examined by the authors from several viewpoints.

By Audrey Medcalf and Ulla Rollins

12 Van Nes Rotationplasty: Psychological perspective

Even though Van Nes rotationplasty is an elegant surgical solution, much of the responsibility for the emotional and psychological support required by the patient falls on the operating room nurse. In this article, a psychological perspective, the critical issues faced by the Van Nes rotationplasty patient both pre- and post-operatively are examined, with the focus on the role of the nurse in assisting the patient overcome his/her feelings of powerlessness and threatened self-esteem.

By Audrey Medcalf

22 Uncemented Total Hip Arthroplasty

The surgical need for both cemented and uncemented total hip arthroplasties is readily acknowledged. Some hip transplants call for a cemented prosthesis (shorter post-op recovery period) others an uncemented one. In this submission, the pre-operative requirements of the OR nurse as well as the operative procedure itself relating to the use of an uncemented prosthesis in a total hip arthroplasty, are discussed.

By James Finlay

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Van Nes rotationplasty:

Perioperative nursing management

Audrey Medcalf, Reg.N., B.S.N.
Ulla Rollins, Reg.N.

Toronto's Mount Sinai Hospital pioneered, in North America, the Van Nes Rotationplasty in July 1985, as an alternative surgical management of osteosarcoma in the adult population. Originally, Borggreve (1930) developed and Dr. Van Nes (1950) utilized this procedure for children born with congenital absence or shortening of the femur. Cosmetically, Van Nes Rotationplasty has an unusual appearance, but is unique in its ability to salvage the lower limb. This allows the foot to make 'ground' contact when fitted with a specially designed prosthesis.^{1,2,3}

Osteosarcoma

Osteosarcoma, the most common primary sarcoma in bone, occurs primarily in adolescent and young adults between the ages of 10 and 25 years. The tumor generally extends into and through the cortex of the bone into the surrounding soft tissues. High grade sarcomas tend to metastasize to the periphery of the lung field.⁴ To determine the tumor size and the extent of the disease, pre-operative investigation and management include angiograms, chest x-rays, thoracic CT scans, tomograms and bone scans. Pre-op chemotherapy is given in an attempt to shrink the leg tumor and ease dissection.

Although the actual surgery may take 6-10 hours, the procedure is very straight forward. Basically, the bone tumor mass to be resected, is isolated from the distal femur and proximal tibia. The procedure begins with an exploration of the sciatic and common peroneal nerve down to the popliteal region. The femoral artery and vein are exposed to determine the tumor involvement of the structures.

If the vessels are involved with the tumor,

microvascular surgeons dissect and reanastomose the vessels. Rarely is the common peroneal nerve involved. The tumor must have an outer covering of thick healthy muscle and connective tissue. All the muscles of the femur and tibia are severed at the level of the bone resection. An en-bloc excision, by osteotomy, removes the tumor without opening the knee, from the distal femur and proximal tibia. The lower tibia and fibula, rotated 180°, is then fixated to the proximal femur by compression plate and screws. The re-anastomosis of the quadriceps tendon to the triceps of the calf muscle and the toe extensors to the hamstrings provides extension and flexion, turning the ankle joint into an effective knee joint. Excess length of vessels is looped into the fascia.^{3, 6, 7}

Prior to the use of Van Nes Rotationplasty, patients had a choice between an arthrodesis, endoprosthesis and high-above-knee amputation for surgical management of osteosarcoma. Each pro-

About the authors

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cedure offers advantages and disadvantages (Table 1).

Due to the traumatic nature of the procedure, patients require comprehensive support from nursing, medical and social services staff. Efforts are also directed at enhancing the resources of the family to provide acceptance and support.⁵

Although the surgery may sound complicated, the positioning (supine), draping and instrumentation are basic. Draping the limb to the iliac crest, allows

maximum exposure and easy reference of the femur length and position of the knee joint during surgery. Instrumentation consists of a basic ortho set with cardiovascular clamps, AO compression set, and the extras required for two surgical teams. Due to the extensive nature of the procedure, these patients require intensive intra-operative nursing. The following plan provides optimal nursing intervention for the patient undergoing a Van Nes Rotationplasty.

PROCEDURE	ADVANTAGES	DISADVANTAGES
1. Arthrodesis with allograft.	- Preserves length of leg. - Normal body image.	- Loss of function of knee joint. - If longer than 15-20 cm. may lead to failed allograft and additional surgery. - Impaired mobility of lower leg. - Cannot be used on children due to expected longitudinal growth.
2. Endoprosthesis.	- Preserves length of leg. - Normal body image.	- Impaired mobility of lower leg. - Requires surrounding soft tissue and muscles to make it work. - Special prosthesis. - Prosthesis may become loose and/or wear out. - Cannot be used on children due to expected longitudinal growth.
3. High above-knee-amputation.	- Radical removal of tumor. - Cosmetically acceptable prosthesis.	- Difficult to fit prosthesis. - Phantom pain. - Possible stump breakdown. - Poor gait. - Long hospitalization. - Limited choice for subsequent intervention.
4. Rotationplasty.	- Early ambulation. - No amputation/ phantom pain. - Short hospitalization. - Walking with prosthesis 6-8 weeks post-op. - Tissue surrounding tumor removed; femoral vessels and nerves remain intact. - Gait as good as below-knee amputation. - No stump breakdown/shaping. - Limb function maintained with effective knee joint. - Choice of above-knee amputation if poor psychological readjustment. - Knee joint senses where foot is at all times.	- Cosmetically unusual. - Prosthesis with thigh socket. - Potential psychological maladaptation. - Body image readjustment.

Table 1

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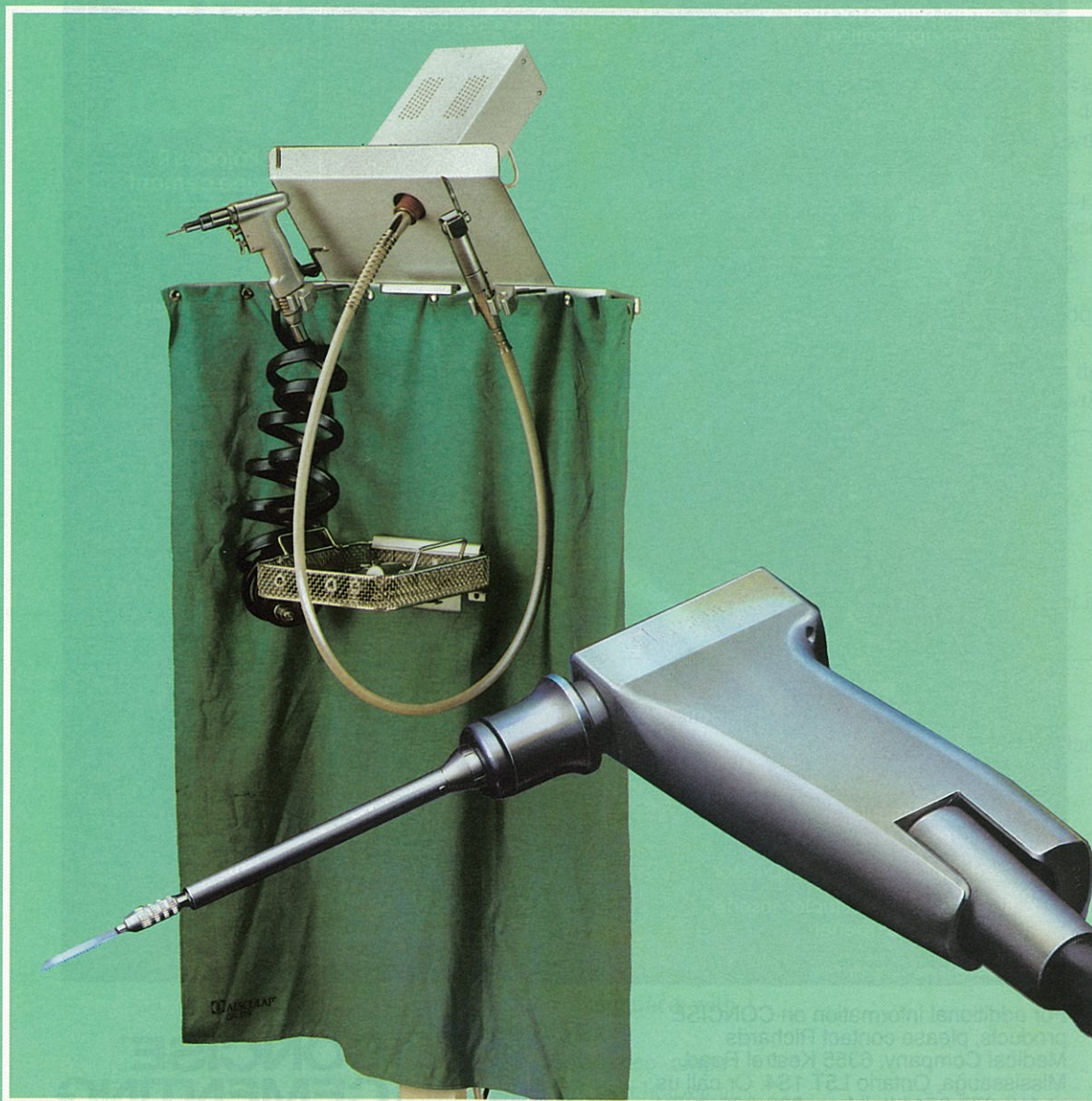




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PROBLEM	EXPECTED OUTCOME	NURSING ACTIONS
1. Fear, anxiety related to actual surgery, anaesthesia, and powerlessness over loss of control.	The patient will: - experience minimal apprehension and fear; - be able to verbalize fears; - experience smooth induction of anaesthesia.	1. Assess patient's understanding of procedure and anaesthesia. 2. Provide patient opportunity to verbalize fear and anxiety. 3. Explain all nursing procedures. 4. Encourage patient to ask questions. 5. Remain with patient throughout induction. 6. Eliminate all extraneous noise. 7. Restrict traffic in O.R.
2. Potential for injury in O.R.	The patient will remain injury-free in the O.R.	1. Verify operative site with consent and patient. 2. Ensure all allergies are documented and verified with patient. 3. Maintain proper body alignment during positioning. 4. Apply electro/surgical ground plate according to principles. 5. Check operative instruments and equipment prior to surgery. 6. Apply safety strap. 7. Document all details of procedure. 8. Adhere to principles of aseptic technique.
3. Potential impairment of skin integrity related to immobility, pre-op chemotherapy, pooling of solutions, edema, secretions.	Skin will remain intact.	1. Provide alternating air mattress or sponge "egg crate". 2. Pad pressure areas with positioning aids. 3. Place absorbent drapes under limb during skin preparation. 4. Remove absorbent drapes prior to surgery. 5. Apply E.S.U. ground plate after prepping and positioning.
4. Potential hypothermia related to length of surgery, large open operative site, cool room temperature, excess fluid loss.	Core body temperature will remain between 36 and 37°C.	1. Cover patient with warm blanket prior to surgery and immediately post-operatively. 2. Increase room temperature prior to bringing patient into the operating room. 3. Activate warming blanket prior to patient arrival. 4. Provide for anaesthesia: - blood/fluid warmer - humidified heated gases - warming blanket.

(Continued next page)

PROBLEM	EXPECTED OUTCOME	NURSING ACTIONS
5. Potential fluid volume deficit related to decreased fluid intake/NPO, abnormal fluid loss (3000-5000cc. during surgery).	Patient's fluid volume will be maintained.	1. Provide for anaesthesia: - IV blood tubing; - CVP line and arterial line. 2. Check availability of blood and have in O.R. suite. 3. Maintain accurate measurement of fluid loss by: - Foley catheter output; - Weigh sponges for blood loss; - Measure suctioned fluids. 4. Provide sterile tourniquet to decrease blood loss. 5. Document: - Irrigation used; - Fluid loss; - Fluid intake.
6. Potential for vascular bleed related to manipulation of major vessels.	Early recognition of and control of vascular hemorrhage.	1. Provide vascular clamps and sutures on primary set-up. 2. Provide sterile tourniquet.
7. Potential alteration in tissue perfusion related to vascular anastomosis, surgery, stasis of extra-cellular fluid.	Edema will be minimal.	1. Cool lower leg on bags of ice to decrease perfusion. 2. Apply soft dressing with elastic bandages. 3. Elevate limb with pillow. 4. Provide plaster if required.
8. Potential wound infection related to contamination during intra-operative period.	Wound will remain free of infection.	1. Maintain aseptic technique. 2. Monitor traffic in O.R. 3. Restrict conversation. 4. Apply bactigras to incision.

CARE FOR THE CAREGIVERS - (Care Plan for the O.R. staff)

PROBLEM	EXPECTED OUTCOME	NURSING ACTIONS
1. Potential for confusion of nursing activities related to: - lack of knowledge of procedure; - two surgical teams working simultaneously; - multidisciplinary surgical teams involved.	Nursing activities are organized during procedure.	1. Check assignment. 2. Ask questions, seek information, check surgeon preference cards. 3. Provide extra basic instrumentation. 4. Provide: - experienced scrub nurse. - accessory/ancillary equipment. 5. Check if vascular surgery is involved. 6. Provide A.O. fixation table.
2. Potential fatigue of surgical teams related to length of procedure.	Teams will function efficiently with minimal fatigue.	1. Provide juice and cookies. 2. Schedule coffee/lunch breaks with restful environment. 4. Provide soft background music selections.

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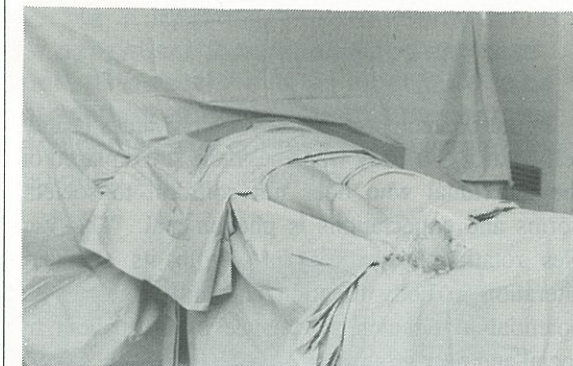
Acknowledgements:

We would like to thank Kathleen MacMillan for her assistance and Dr. F. Langer for his assistance with the medical aspects of this paper. ■

1.



2.



3.



Number 1:
Shows the patient in post-op in supine position. Note length of foot and position of foot in relation to normal leg.

Number 2:
The draping procedure to be followed in a Van Nes Rotationplasty.

Number 3:
Photo shows the foot attached to the femur and the new knee joint.

Van Nes Rotationplasty:

The psychosocial perspective

By Audrey Medcalf, Reg.N., B.S.N.

In our contemporary society which values beauty, self-control and body wholeness, the stress placed on the individual who does not conform to societal norms and expectations is phenomenal. The Van Nes rotationplasty procedure, with its attendant alteration in body function and structure, has the potential to threaten acceptance of the patient by social and peer groups.

Mobility over cosmesis

The Van Nes procedure offers an elegant surgical solution to the patient who values mobility over cosmesis. However, there are critical issues that must be faced by the patient pre- and post-operatively. These issues involve: • the nature of the procedure itself; • the pre-operative psychological status of the patient; • the reconstruction of body image and self-esteem that is experienced by the patient before acceptance; • the feelings of powerlessness; • and, the alterations in the family process.

Pre-operatively, the primary patient concerns are related to the change in body image, and to the diagnosis of malignancy. Some of the thoughts and feelings which have been expressed are: How will the limb appear after surgery? If I think it looks ugly to have the foot on backwards, how will my friends react? Will they think I am a monster/freak? Will I still be feminine and able to wear dresses? How will friends react when I return home? What kind of activities can I participate in? Will I be able to dance or swim? What will my children think? Will this cure me of my affliction?

Because of these concerns and the nature of the surgery, patients require a tremendous amount of support and encouragement, not only from the nursing and medical staff, but also from social services, previous rotationplasty patients and family. The patients need to work through their feelings. Even though the situation may not be comfortable, nurses should not simply placate the patients and try to make them feel better, but provide support and allow them to resolve their feelings. Since we work with patients 24 hours a day, nurses have more opportunities to provide this support.

Psychosocial needs

Post-operatively, the psychosocial needs of the patient and his family are priorities. Intrusive procedures such as the Van Nes rotationplasty can threaten an individual's sense of wholeness. Because body image provides a basis for identity, almost any alteration in body structure is experienced as a threat, especially in North America, where wholeness, beauty and health are highly valued.¹ Body image, based on past as well as present experiences, is the mental picture a person has of his own body.

About the author

Audrey Medcalf, Reg.N., B.S.N., is currently clinical teacher, Mount Sinai Hospital Operating Room, Toronto. A co-founder of the first laser course for nurses in Canada, she received her B.S.N. from the University of British Columbia, Vancouver, B.C.

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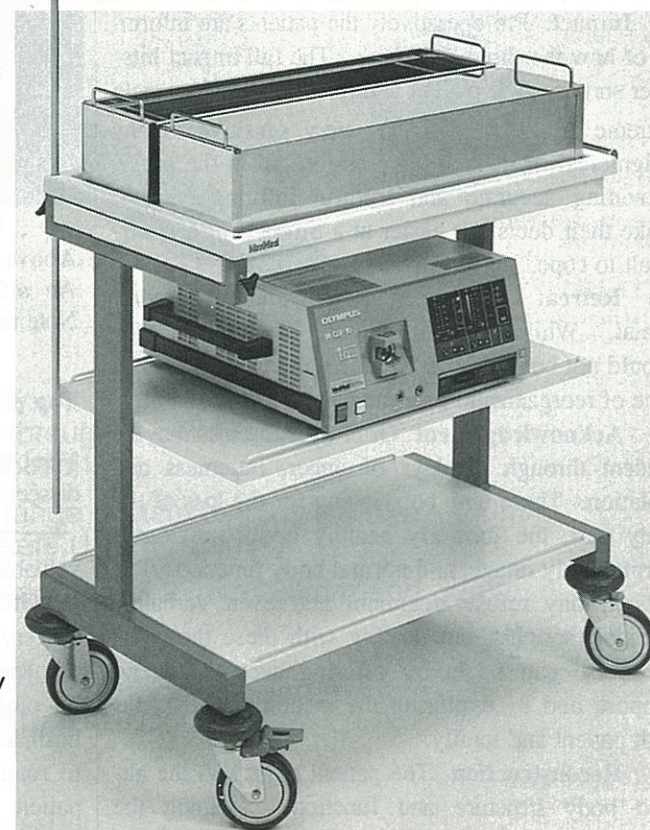
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Attitudes, emotions and personality reactions to one's own body develop throughout the maturational stages of life from birth. Both the patient and nurse have their own personal self-concept. To deal effectively with others, we must be aware of our own behaviour, feelings, attitudes and responses. Our attitude can hinder or help the patient's adaptation to an alteration in his self-concept, body image and self-esteem.

Stages of adjustment

The individual experiencing traumatic body image assault may experience four stages of adjustment:

(1) **Impact.** Pre-operatively the patients are informed of how the limb will look. The full impact hits after surgery. The patient and his family are in a state of extreme anxiety. They are very sensitive to any judgmental or negative expressions from the nurse. Providing accurate and truthful information will make their decisions easier at a time when it is difficult to cope.

(2) **Retreat** Characterized by withdrawal and/or denial. While responses should be accepted they should not be reinforced by the nursing staff. It is a time of reorganization for the patient and the family.

(3) **Acknowledgement** Grief over the loss may be evident through displays of anger, bitterness and isolation. There may be grieving for the loss of the body part, the formerly healthy body, previously normal body image, and normal body function. The patient may refuse treatment and even verbalize suicidal thoughts. In dealing with these thoughts, the nurse can begin by offering acceptance and support, and by exploring the meaning of the loss with patient and family.

(4) **Reconstruction** The patient adjusts to the altered body structure and function. Helping the individual to see himself as a whole person in spite of the change will contribute to his adjustment.²

Assessment of the adult undergoing body changes, which necessitate eventual changes in self-image is often difficult because of the abstractness of self-image. In order for the nursing intervention to be



Above

An affected leg prior to Van Nes rotationplasty. Note the extreme swelling in the affected knee.

Top photo

The Van Nes procedure in progress with the dissection showing the femoral vessels.

valuable, we need to assess the individual's feelings pertaining to himself both before and after the surgery. The values he possesses regarding beauty, wholeness and physical activity, the values he places on others' reactions, the meaning of his affected limb, and the patient's perception of others' reactions to rotationplasty are all significant. Problems the patient anticipates in adjusting to his changed appearance, as well as his previously developed coping mechanisms, are also very important.

Unfortunately, with the first patient who underwent Van Nes rotationplasty, the unit nurses did not fully comprehend what the surgical procedure entailed. Therefore, the nurses experienced the

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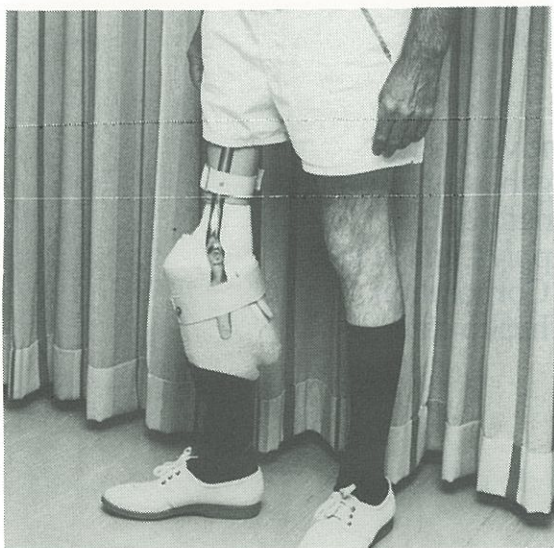
stages of impact, retreat, acknowledgement and reconstruction, while trying to deliver supportive care to the patient at the same time. Because of previous admissions, the patient readily assumed the teacher-role by explaining his understanding of the procedure to the nurse.²

Reintegrating body image

Patients react differently to their changed appearance. One individual referred to his new limb as a 'flipper', indicating a non-human appendage, but eventually referred to his limb as 'my leg'.² Patients need opportunities to verbalize their feelings. Expression of feelings is the first step towards reintegration of body image.

Patients are fitted with their prosthesis as quickly as possible in order to resume their daily living activities, this occurs within 6-8 weeks for the majority of patients.

Alterations in perception related to the rotation of the limb may retard the process of the reintegration of body image and create new safety hazards. Although retaining the foot allows the patient to make 'ground' contact, individuals have to adjust to the relocation of their toes and heel. One patient stated that, when bathing, if the new knee joint (which is the actual heel of the foot) is out of the water, and the toes are still submerged in warm water, there is an altered perception of water temperature. The bottom of the bath feels cold, and



Above photo shows Van Nes rotationplasty patient with special prosthesis post-op.

the top of the bath feels hot. In spite of the anatomical reversal, the sensations are the same as if the foot was in the normal position. Similarly, the patient is at high risk of falling. If the person removes the prosthesis before going to bed and then forgets that the affected leg is shorter than the other when he stands up, he falls over.

Sources of feelings of powerlessness may be intrinsic or extrinsic. Hospitalization itself leads to decreased control as some aspects of self-care and decision-making must be relinquished to members of the health care team. There is a reduction in privacy and isolation from personal support networks. Adolescents are particularly vulnerable as their support is derived more from peer groups than from family members who are more likely to be present. Lack of explanation from caregivers, and failure to include the patient in the decision-making process can contribute to powerlessness as does a diagnosis of malignancy, an uncertain prognosis and forced immobility. Inability to perform role responsibilities, career pressures and family members are other potential sources of feelings of powerlessness.

Control of environment

Powerlessness is manifested in many ways, through apathy, aggressive behaviour, as well as anxiety. Nurses need to assess each individual to determine usual level of control and decision-making, and the resultant effects of losing such elements of control. The individual should be encouraged to determine the timing, sequencing and content of physical care. He must be given control over his immediate environment.

Although the main focus of nursing care is on the patient, the family is extremely important. We have found that sometimes the young adult patient assumes the parental role in order to assist the parents in resolving their own feelings. This does not allow the patient time to resolve his own feelings of loss regarding his body image.

Working through

Adolescents or young adults need to be able to act in age-appropriate behaviours and not as a parent to their own parents. Parents need to be emotionally supported and encouraged to be open with their son or daughter - to help the patient work through the disease process and the sense of isolation. Siblings

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Role responsibilities may change within the family. If the breadwinner of the family is the patient, the wife may have to add the burden of income generation to her roles of wife and mother. Coping with this role adjustment may place extra strain on the marriage. If the family does not have extended health insurance or is unable to find sponsorship from a community service group, the financial burden of the prosthesis, which may cost \$6,000.00 is even more stressful.

Daily challenges

When one patient returned home to his wife and daughters, his 3-year-old daughter did not mind the appearance of the leg or prosthesis; however, his 6-year-old daughter found it weird and did not want to look at it or touch it. The father was very hurt by this experience. The reaction of the 6-year-old may be related to her developmental stage. Young children may relate the change in leg structure on someone else to the possibility that it may happen to themselves. This family has managed to work through this difficulty.

'Van Nes patients' face new challenges daily. Not only are they attempting to recover physically from their surgery, but also reconstructing their body image and self-esteem, becoming accustomed to their new leg, trying to gain more control during hospitalization as well as maintaining familial roles.

One patient experienced poor psychological adjustment to the altered appearance of his limb which continued until his death from metastases eight months post-operatively.² Patients have danced, and ice-skated. Adults tend to be more cautious with their physical activities than do children who can run, jump and climb with their prostheses. Persons who are unable to adjust to the appearance and function of the Van Nes rotationplasty still have the option of a high-above-knee amputation.

Intervention goals

The goal for nursing interventions is to help the individual reintegrate his self-concept and self-esteem in relation to the change. To help the individual achieve this goal, nurses must:

- (1) Encourage him to discuss his feelings in relation to his changed body function or structure.
- (2) Assist him without pressure to become re-acquainted with himself by viewing and touching the new limb. Reactions from the nurse during the first dressing change have a tremendous impact as to how the individual accepts his changed body. If the nurse recoils from the patient in shock when viewing the limb for the first time, this will reinforce the patient's negative feelings about his changed image. Nurses need to be aware of the potential benefits of the surgery in order to support the patient through the hospital experience. Previewing the rotationplasty provides the nurse with the information necessary for therapeutic interaction. If the nurse's body language is one of acceptance and interest, self-acceptance is fostered in the patient.
- (3) Provide opportunities for the patient to gain mastery over his own body by resuming activities of daily living.
- (4) Give positive recognition for what the patient is able to do.
- (5) Help the patient to visualize himself as a whole person in spite of the loss or alteration.
- (6) Help the individual verbalize unresolved experiences, distortions, or fears in relation to his body image.¹

'Marathon of Challenge'

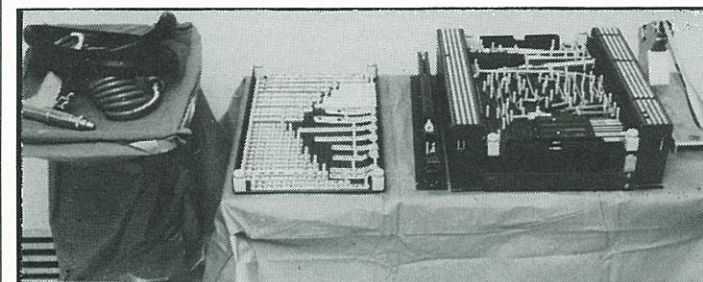
In 1982, the Year of the Disabled, the Vancouver Marathon, for the very first time, invited athletes with disabilities to participate in the marathon. At the awards ceremonies, athletes who were blind or in wheelchairs received a standing ovation from fellow runners and spectators in recognition of their ability to overcome the physical and psychological barriers of their disabilities.

Today, patients with Van Nes rotationplasty are just beginning their marathon of challenges. Nurses can make a significant contribution to the life-long health of the patient undergoing rotationplasty, by giving assistance through physical care, listening, counseling, teaching and working with the family and close friends. Nurses need to show acceptance of the patients. They need to talk to patients, to find

out how they are reacting to the pending surgery and the possible change in their body image. The nurses' role in support and reconstruction of the patient's body image is critical.

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Windsor and district O.R. nurses schedule five speakers for 3rd Annual Conference in February

The Operating Room Nurses Association of Windsor and District has scheduled February 26 and 27, 1987 for its 3rd Annual Conference to be held at the Hilton Hotel and adjacent Cleary Auditorium.

Programme highlights will include an exposition of operating room/surgical products, a number of education/clinical sessions and workshops, a wine and cheese party and luncheon with a fashion show.

Last year, attendance was in excess of 125 with 30 companies on hand for the product exposition.

The Conference Theme will centre on operating room nurses and their safety in the work place.

Five speakers

The two-day affair gets underway Friday evening, February 26. Following the official welcome by Association President, Donna Kristalovich, delegates will hear a keynote address on "Hepatitis and AIDS" by Colleen Dow-Windsor, an infection control nurse at Windsor Western Hospital. This will be followed by the opening and viewing of exhibits

at the Cleary Auditorium. A Reception and Wine and Cheese Party follows.

Saturday will be a full day of educational sessions. Four keynote speakers have been lined up:

- Elizabeth Stinton of the Addiction Research Foundation will inform delegates on the subject of "Alcohol and Drug Abuse," and "Project Turnabout."
- Carol Lenox, clinical instructor, O.R., R.R. and day surgery at the Mississauga Hospital will speak on "Stress and the O.R. Nurse."
- Dorothy McGee, a psychiatric nurse, will instruct delegates on how they can deal with stress. This session includes a demonstration of relaxation exercises.
- Ann Sorenson, a nurse-lawyer will speak on the topic of "The Legalities Affecting O.R. Nurses."

The Saturday lunch will feature the fashion styles of Mailyn Brooks, with the closing remarks and conclusion of the conference scheduled for 1600 hours. Additional details and registration information from: Sheila Walter

O.R. Nurses Association of Windsor & District
3607 Byng Road, Windsor, Ontario N8W 3J1

Uncemented total hip arthroplasty

By James Finlay, R.N.

The use of uncemented prostheses in total hip arthroplasty is not a new concept; however there are new developments in the design of these prostheses.

A new type of prostheses with a double layer of vitallium beading on the proximal third, uses biological anchoring through bony ingrowth rather than cement. Research suggest that once the implant has obtained bony ingrowth, the prosthesis/bone bond will be permanent. Loosening will be less likely to occur compared to the cracking of cement and resorption of bone that takes place with cement.

Polymethylmethacrylate (PMMA)

When cement or Polymethylmethacrylate (PMMA) is used, it does not actually bond to the bone, but is separated by a thin layer of blood and tissue debris which becomes scar tissue. This eventually forms a layer around the surface of the cement. As well, when PMMA is mixed, it can reach temperatures close to 100 degrees celsius while setting. This is believed to cause bone death along the edges of the cement and decrease the white blood cell viability. This process may be a contributing factor of increased post operative infections in cemented prosthesis.

The one big disadvantage of uncemented prosthesis is that bony ingrowth takes time and hip implant patients may be non-weight bearing for up to three months. In comparison, the cemented prosthesis patient may be weight bearing the first day post operatively. Therefore your older compromised patients cannot afford the longer post-op recovery times related to possible complications such as pneumonia or decreased joint range of motion.

Medical indications for hip transplant:

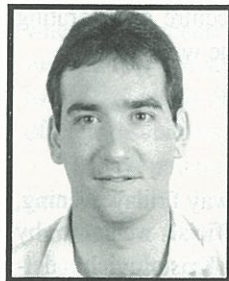
1. Subcapital femoral fractures
2. Avascular necrosis of femoral head
3. Rheumatoid arthritis
4. Revision of prior arthroplasties
5. Osteoarthritis
6. Bony alkylosis

These patients seek medical assistance with complaints of pain, stiffness, motion changes and joint instability. The surgeon's goals in hip arthroplasty are to alleviate pain, create good functional joint motion and increased stability. The surgeon must evaluate the patient before deciding which implant to use.

Large variety

There are a large variety of total hip prostheses available on the market today and there will always be a need for both the cemented and uncemented. In our hospital, we tend to use the uncemented porous coated anatomical (PCA) total hip system in the

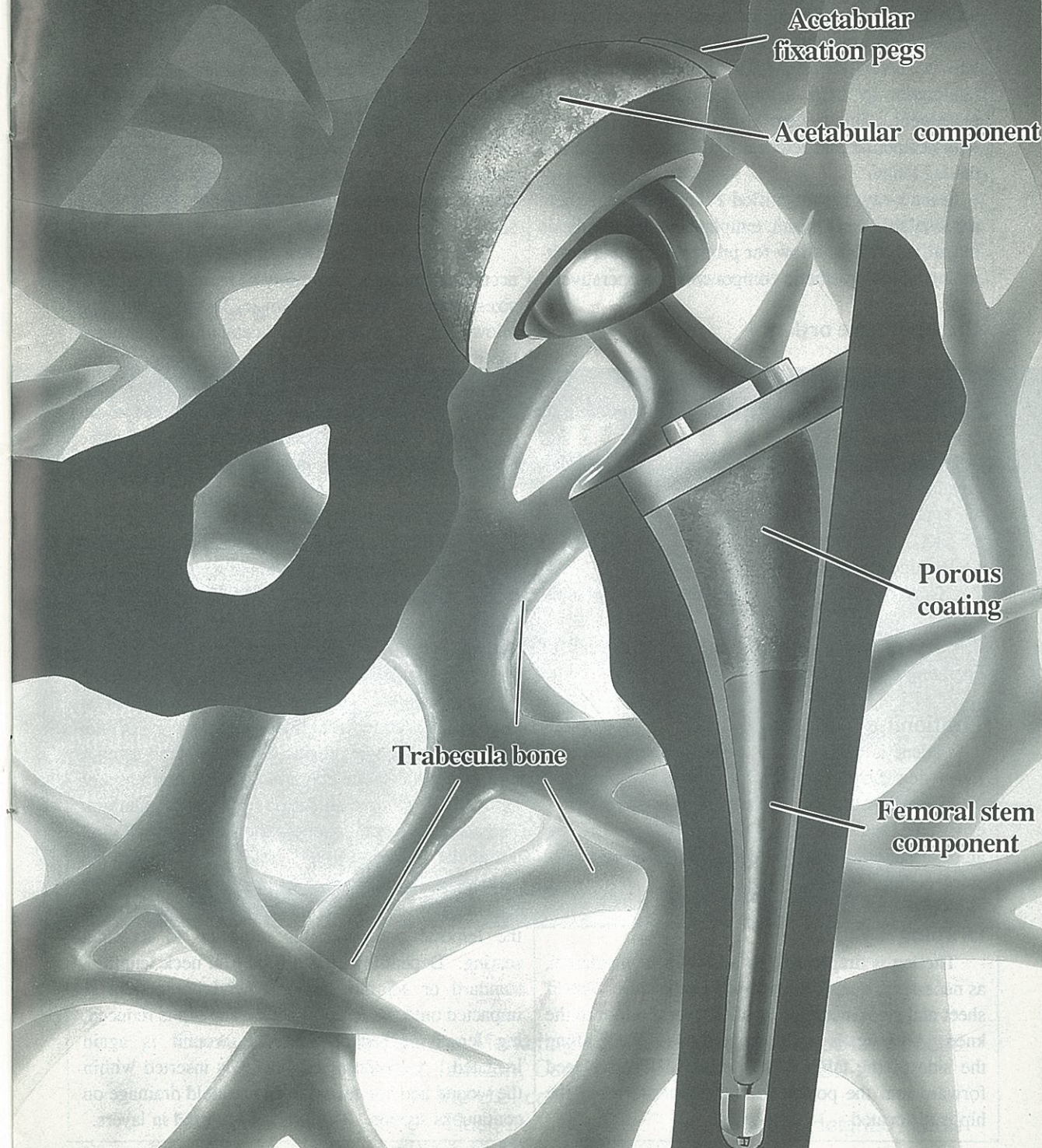
About the author



James Finlay, R.N., is a graduate of the Post-graduate Operating Room Technique and Management Program, Hotel Dieu Hospital, Kingston, Ontario. He graduated from Sir Sanford Fleming College in Peterborough, Ontario. He is currently a staff member on the surgical unit of the Toronto Western Hospital.

Acknowledgements

To Bob Desjardins, Howmedica, for the literature and information; Theresa Markowski, O.R. Instructor and the nurses and surgeons of Hotel Dieu Hospital, Kingston, Ontario.



active, healthier patient and the cemented Muller-type Cad total hip system in the older, compromised patient. These and a number of other hip prostheses are available from orthopaedic supply companies.

The PCA total hip system is a multiple sized right and left femoral stem component. It is the same physiological shape as the proximal femur and allows various neck lengths by offering two choices each of the femoral head and acetabular components.

The instrumentation that accompanies this system is specially designed to use anatomical bony landmarks to help achieve accurate component placement. This system also allows trial reduction with acetabular and femoral trial components to test the leg length.

Since x-rays are magnified 17 to 24 percent, there are available clear plastic templates of the prosthesis magnified 20% to allow for proper sizing and positioning of the prosthetic components pre-operatively.

Pre-operative orders

1. NPO after 2400 hours
2. Intravenous 2/3 and 1/3 at 125 cc/hr, morning of planned surgery
3. Complete blood Count, electrolytes, BUN, creatine
4. Type and cross match for 6 units packed cells
5. EKG, chest x-ray
6. Routine urinalysis
7. X-ray of operative hip - anterior/posterior/lateral views
8. Cephapirin sodium 2 grams per IV on call to operating room

Positioning

Patient is placed in a lateral position with the lower leg flexed at the hip and knee, and the operative leg straight. If the patient is placed properly, an imaginary line drawn between the two anterior superior iliac spines should point vertically at the ceiling.

Draping

The leg is draped free to allow for manipulation, as necessary, during the operative procedure. A half sheet and stockinette are applied over the foot to the knee. A pocket is made, using a head drape, along the side of the table. The operative leg is placed forward into the pocket to keep it sterile when the hip is dislocated.

Surgical procedure

An incision is made proximally to the greater trochanter and runs down the lateral axis of the femur distally for approximately 18 cm. Special retractors, which are designed to improve exposure of the acetabulum and femur, are placed. A capsulotomy is done to allow visualization of the acetabulum to allow for proper reaming and good determination of depth.

Anaerobic and aerobic swabs are taken of the synovial fluid. The hip is dislocated, flexed 70 - 80 degrees and the foot is placed in the pocket. Using the femoral neck cutting instruments, the proper measurements are taken and an oscillating saw is used to transect the neck. The head of the femur is salvaged for our bone bank.

The acetabulum is then shaped using hollowed acetabular reamers. A variety of reamers ranging in sizes from 40 mm to 64 mm in 3 mm increments, allows for expansion of the acetabulum to achieve bleeding and meet cancellous bone. Superiorly, the acetabulum has two holes drilled with hollow bone drills to provide acetabular fixation pegs to prevent prosthesis rotation. A trial component the same size as the last reamer is inserted into the acetabulum to check for proper seating and contact with the walls of the acetabulum.

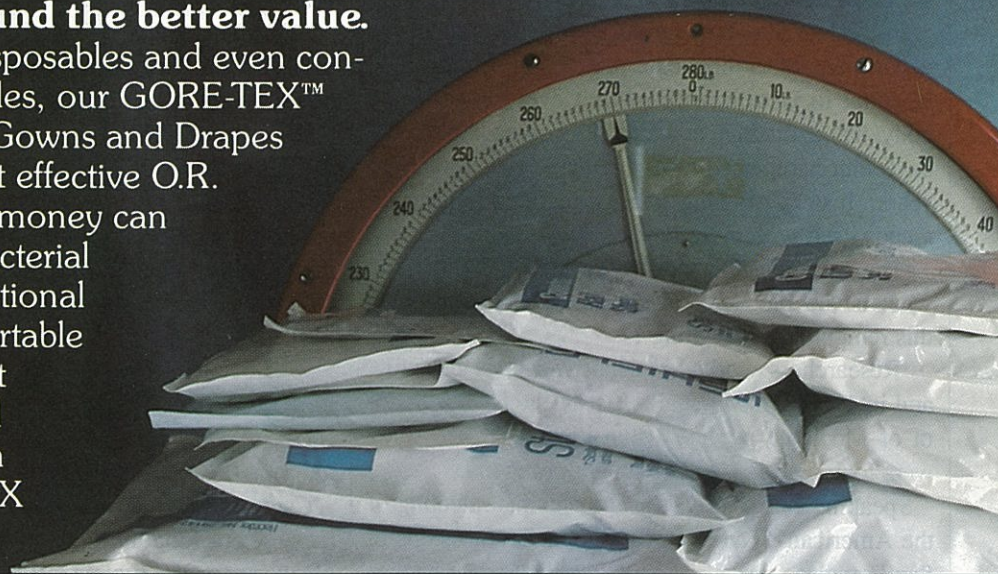
The femur is prepared using the femoral broach which is pounded down the axis of the femoral canal ending with the size of broach that was indicated pre-operatively using the x-ray templates. A head/neck trial is then put on the end of the seated femoral broach and a trial reduction is done to check for proper leg length. The trial components can then be removed to allow for final implantation of the prosthesis. The wound site is well irrigated using 1 litre of normal saline containing 20 million units of Penicillin to remove all debris from the acetabulum. The acetabular component is then lined up with the acetabular fixation peg holes and using an introducer, is impacted until it is fully seated. The femoral canal is irrigated and dried with suction and the femoral component is impacted to its final seating. Depending on the final trial neck length, a standard or +5 mm femoral head component is impacted onto the femoral neck. The hip is reduced, leg length rechecked and the wound is again irrigated. A 16 thoracic catheter is inserted within the wound and connected to an airshield drainage on continuous suction. The wound is closed in layers.

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1. Sips to clear fluids
2. Intravenous 2/3 & 1/3 at 100 cc/hr
3. Bed rest - Non weight bearing first day post-op
4. Complete blood count, electrolytes
5. Airshield drainage system on continuous suction
6. X-ray of hip - anterior/posterior/lateral views
7. Penicillin 500,000 units IV q6h x 4 doses

Conclusion

Total hip arthroplasties are continually advancing. We now offer the once debilitated patient a return to a productive, pain free, life with a functional hip.

New era in orthopaedics only a few years away as researchers attempt to refine bone growth protein

In the 18th century, John Hunter, who was titled "the Surgeon-extraordinary to King George III," was the first person to document and teach that the skeleton is a living tissue. Prior to Hunter, bone was thought to be no more alive than stone. Hunter taught that bone steadily remoulds itself throughout life, destroying worn-out cells and replacing them with new bone cells instead of scar tissue.

In the late 50s, Dr. Harold Frost, chairman of the department of orthopaedic surgery at Henry Ford Hospital in Detroit, showed that every bone in the body has a distinctive half-life. For example, half the femur is replaced from the inside out every eight years. Instead of using scar tissue, bone replaces or mends itself with more bone.

The next question was "Why does it do this and what is the biochemical substance responsible for this remoulding or healing?"

Researchers worked diligently on this question, and in 1965, Dr. Marshall Urist of the UCLA School of Medicine predicted that the substance they were looking for would be a pure protein.

Speaking earlier this year at the annual meeting of the American Academy of Orthopaedic Surgeons in San Francisco, Dr. Urist explained that when he was working at UCLA in 1965 he observed bone morphogenetic activity in a crude extract made from demineralized human bone. With the advent of modern protein chemistry, Dr. Urist now thinks that the protein, which he called "bone morphogenic protein (BMP)" will soon be commercially available. "The availability of the protein," Dr. Urist said,

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"will make it possible to repair large bone defects from old infections, injuries, excised tumors, and congenital deformities."

Dr. Urist, who is director of UCLA's bone research laboratory, explains that BMP works as a local hormone, released into the organic matrix of bone "in reaction to the demands of growth and healing of injured parts."

"BMP recruits connective tissue cells around small blood vessels to change their pathway of development from fibrous tissue to bone." He calls the protein (BMP) a "connective tissue cell-recruiting agent for bone replacement."

With BMP, orthopaedic physicians will be able to battle bone defects with a body protein. Presently, the protein is isolated from bone powders purchased from cattle or pig slaughter houses. It requires tons of the powder to yield only ounces of the protein. It would be better to use human protein. But since tons of human bones are not available, this difficulty has to be solved. Enter the genetic engineers.

Using only a tiny amount of the human protein, they are cracking the code in the gene containing the blueprint for the protein. By knowing the code, the geneticists will then locate the gene in a human cell, pull it out and insert the human gene in a microbial cell, which can then be grown in large quantities.

Pharmaceutical and biotechnology firms are currently purifying the protein and planning to scale up production for distribution as soon as it is proven to be effective - within 18 months, says Dr. Urist.

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Lethbridge Regional Hospital has entered into a major development program and is currently constructing a new 330-bed active treatment hospital scheduled for completion in 1988.

The Central Processing Manager, under general direction, is responsible for the functional areas of decontamination, sterilization/processing and case carts. Responsibilities include planning and implementing projects, developing policy and procedure, preparing reports and submitting budgets, implementing administrative and departmental policies and collective agreements.

Preference will be given to graduates from a recognized school of nursing, formal management training or business education and current registration or eligibility for same with the A.A.R.N. Previous relevant experience in nursing or clinical setting is preferred.

Applicants are invited to submit a resume to:



**Director of Personnel
Lethbridge Regional Hospital
1802 - 9 Ave. South
Lethbridge, Alberta T1J 1W5**

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General Journal Information

The Canadian Operating Room Nursing Journal, copyright, 1983, is published six times a year (February, April, June, Sept., Oct. and Dec.) for operating room nurses and related surgical nursing personnel across Canada. It is indexed in Index Medicus, the Cumulative Index to Nursing and Allied Health Literature, and the International Nursing Index, U. S. National Library of Medicine, Bethesda, Maryland.

The Canadian Operating Room Nursing Journal is published by Health Media Incorporated, 214 Merton Street, Toronto, Ontario M4S 1A6 (416) 481-2244.

Saskatchewan operating room nurses launch membership drive province-wide

The Saskatchewan O.R. Nurses Group is interested in contacting as many O.R. nurses in the province as possible. Annual membership dues is \$20.00. Associate membership is \$5.00. This entitles members to discounts on future conferences, the group's newsletter and the Sask. O.R. logo pin.

If you are an operating room nurse in Saskatchewan and interested in the association, you are asked to contact L. Thomas-Aasen, #9 McLelland Bay, Weyburn, Sask. S4H 2V3.

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Toronto General Hospital is seeking qualified nurses for our 24-hour, 7 day per week, 26 room operating room suite. We need highly-motivated nurses who have at least one year of experience and who want the challenge of working in a dynamic and stimulating environment. Eleven services, including open heart, neurosurgery, microvascular surgery and organ transplantation, provide O.R. nurses with an opportunity for team collaboration and area specialization. On-site clinical teachers and active regular inservice and staff development programs ensure staff educational opportunities.

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- Minimum one year O.R. experience;
- O.R. course or the equivalent;
- Current registration or be eligible for registration in Ontario.

If interested, please send your résumé, in confidence, to:

**Personnel Department,
Toronto General Hospital,
657 University Avenue,
Toronto, Ontario M5G 1L7**

TORONTO GENERAL HOSPITAL

Corrections...

On page six of the last issue of the *Canadian Operating Room Nursing Journal* (Volume 5, Number 5, October, 1987), readers are asked to note that a typographical error incorrectly mentioned that Susan Bennington, the author of the submission on "Cochlear Implants," had worked at the Toronto General Hospital. This should read Kelowna General Hospital.

Also, the bibliography on page 11 for the same article on Cochlear Implants failed to make reference to the assistance provided the author by Dr. Cleland and Dr. Doyle of St. Paul's Hospital in Vancouver.

In the "Surgical Product Profile," a special feature in the last issue of the *O.R. Journal* (October, 1987), an incorrect reference was made to the photo of the 'intermittent injection cap' shown on page 24. The correct description should read: "...photo shows the new Jelco Injection cap (not an IV catheter) with threaded hub and transparent plastic construction for instant blood visibility."

On page 38 of the October issue of the *O.R. Journal* a listing appears of the executive and ORNAC board members representing the Manitoba Operating Room Nurses Association (MORNA). The names shown are of the 1986 executive. The Executive and Board for 1987 should have appeared as shown below:

MORNA President/ORNAC Board member
Bev Popowich
Clinical Instructor - O.R., P.A.C.U., C.S.
Misericordia General Hospital
99 Cornish Avenue
Winnipeg, MB R3M 1E2

MORNA President Elect/ ORNAC Board Member
Eva-Marie Lessing
O.R. Staff Nurse
St. Boniface General Hospital
409 Tache Avenue
Winnipeg, MB R2H 1A6

Travenol Canada announces new name

One of Canada's leading health care and laboratory supply companies has a new name. Effective immediately, the name Baxter Corporation replaces Travenol Canada Inc.

Baxter Corporation manufactures, distributes and services more than 60,000 health care and related products in Canada. The company has a network of 23 manufacturing operations, distribution centres and regional offices coast-to-coast in Canada. It is a subsidiary of the Baxter World Trade Corporation.

Calendar of Events...

February 26-28, 1988, Windsor, Ontario: 3rd Annual Conference, Windsor and District Operating Room Nurses Association. (Contact Sheila Walter, O.R. Nurses Association of Windsor and District, 3607 Byng Road, Windsor, Ontario N8W 3J1).

March 6 - 11, 1988, Dallas, Texas: 35th Annual AORN Congress. (Contact Association of Operating Room Nurses, 10170 East Mississippi Ave., Denver, Colo. 80231 U.S.A.).

March 30, 1988, Hamilton, Ontario: Day in Orthopaedics, Hamilton Convention Centre. (Contact Programme in Continuing Medical Education, McMaster University, Rm. IM6, H.S.C., 1200 Main Street West., Hamilton, Ont. L8N 3Z5 (416) 529-9140, Ext. 2219).

April 13, 1988, Hamilton, Ontario: Surgery in the Elderly, Hamilton Convention Centre. (Contact McMaster University Programme in Continuing Medical Education, 416-529-9140 Ext. 2219)

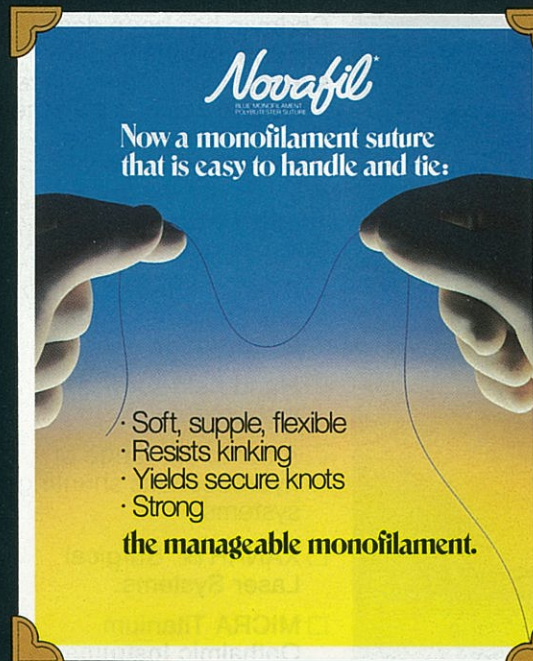
April 16, 1988, Toronto, Ont.: "Trauma Seminar for Operating Room Nurses," sponsored by the Operating Room Nurses Association of Greater Toronto; Toronto Convention Centre. (Details and registration, contact Elizabeth Jordan (416) 733-3054. Fee to be announced).

May 30-June 3, 1988, Vancouver, B.C.: National Conference, Operating Room Nurses Association of Canada (ORNAC), B.C. Convention Centre and Pan Pacific Hotel. (Contact, for delegates, Mary Raikes-Tindle, 5199 Turquoise Dr., Richmond, B.C. V7C 4Z6. For delegates, Jean Kerr, Exhibitors Committee, 1105-2050 Nelson St., Vancouver, B.C. V6G 1N6).

Future National Conferences Operating Room Nurses Assoc. of Canada

1988 - Vancouver, B.C., May 30-June 3
1990 - Toronto, Ontario, April
1991 - Banff, Alberta, May 12-15
1993 - Province of Quebec

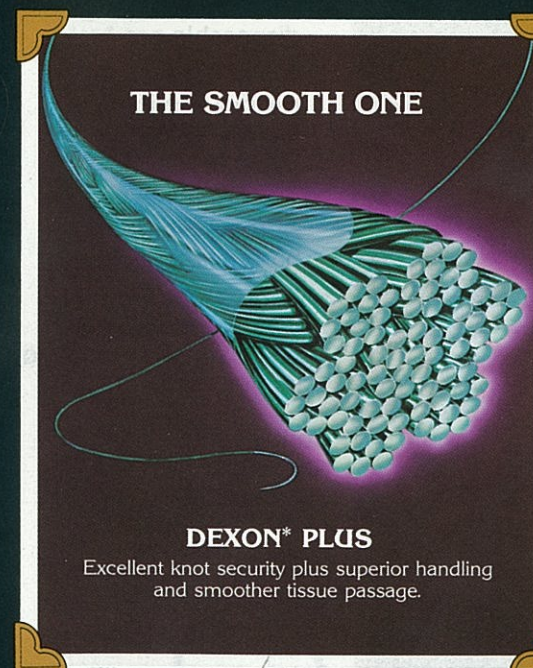
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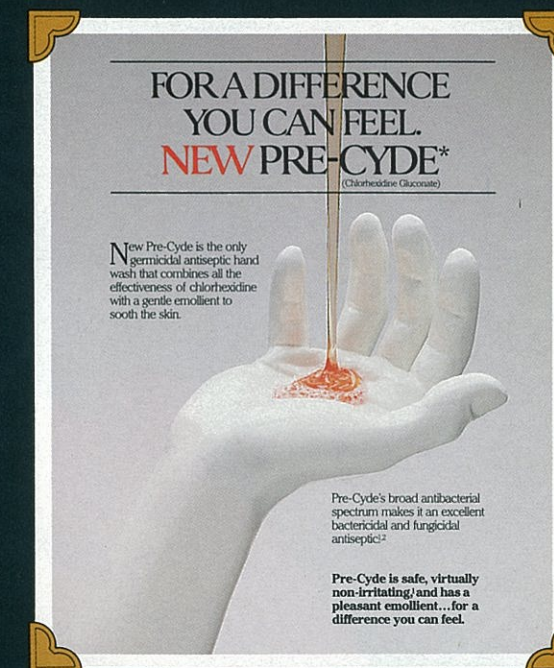
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