

Arthroscopy for Arthritis

Role of Nurses

Ms SARASWATHY VAIDYANATHAN
CHANDRASEKARAN, A.N.

ENDOSCOPY is the direct visual examination of certain natural body opening or cavities by means of hollow lighted instruments or tubes which are either metallic or fibro-optic. Various types of scopies such as Oesophagoscopy, Gastrosocopy, Sigmoidoscopy, Bronchoscopy, etc., are familiar to everyone. But Arthroscopy, a new procedure, is done to visualise the interior portion of the joint, through a small incision. Arthroscopy is normally done for diagnosing Rheumatic Diseases and has therapeutic values also.

During Arthroscopy of knee joint various structures like synovium, petalla, cruciate ligament, cartilage can be visualised and biopsies of any structure can be obtained for analysis. Nowadays operating Arthroscopes are available to do surgery like meniscectomy.

Indication for Arthroscopy

1. When there is injury to the cartilage of the knee joint Arthroscopy is done to determine whether surgery is indicated or not.

2. Arthroscopy is also used to check the results of surgery such as cartilage transplant, reconstructed cruciate ligament.

3. After an operation if the original complaints persist, to confirm whether reoperation is necessary or not.

4. For the assessment of synovial membrane as in cases of Rheumatic Diseases and for obtaining biopsy specimen of synovium under visual control. For this reason, Arthroscopy is being done in the Department of Rheumatology, Madras Medical College and Government General Hospital, Madras.

5. For the diagnosis of lesion and assessment of severity, Arthroscopy is done before Arthrotomy.

6. Minor surgical procedures such as excision of villo nodular synovitis, soft tissue adhesions, cruciate ligament mass, small flap tear, cartilaginous loose bodies, necrotic sheet of synovium, meniscus tear repair can also be carried out arthroscopically.

Anaesthesia

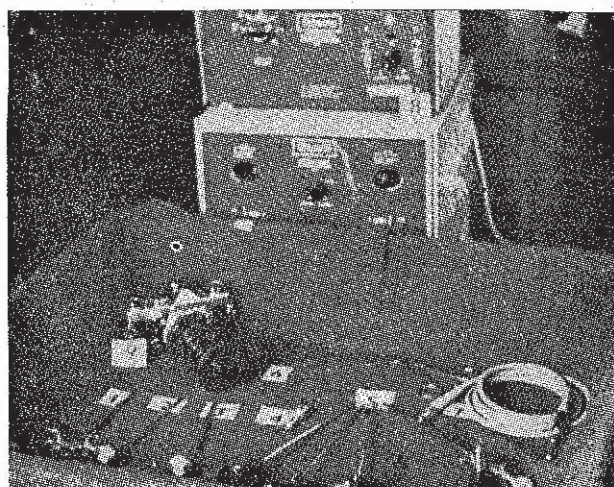
The type of anaesthesia is left to the choice of the Anaesthetist. General anaesthesia is preferred for better muscle relaxation. In the majority of cases a mixture of halothene, nitrous oxide and oxygen is

administered with a mask. Since duration of the procedure is not more than 30 minutes intubation is not necessary. Arthroscopy can be done under spinal anaesthesia as well as local anaesthesia. But local anaesthesia is avoided usually because the patient can move the joint which may result in fracture of the arthroscope.

Apparatus

The Arthroscopy set consists of a telescope within an outer rigid sheath with a sharp trocar used for insertion and a cold light source. Telescope consists of glass rods with their air lenses between them which will transmit about nine times the light of conventional optical system, so allowing a considerable reduction in the diameter of the telescope. This type of telescope is used in Storz Arthroscope, which is in use at present at the Department of Rheumatology, Government General Hospital and Madras Medical College, Madras.

ARTHROSCOPE SET



1. Canula -With inlet and outlet taps 2. Sharp Trochar 3. Blunt Trochar 4. Bridge connection 5. Various angled scopies 6. Biopsy forceps 7. Optic cable 8. Cold light source 9. Endoscopy camera.

There are basically two sets of instruments: (a) Diagnostic set, and (b) Operative set.

Diagnostic set consists of various types of scopes and a probe. The angle of the scope varies from 0° to 130° (Tubular view to wideangle view). Opera-

Ms. Saraswathy Vaidyanathan is Nursing Tutor, Department of Rheumatology, Govt. General Hospital, Madras. Chandrasekaran, A.N. is Professor of Rheumatology, Madras Medical College & Govt. General Hospital, Madras.

tive set consists of the scope, various types of operating instruments such as cutting scissors, Retrograde knife, Grasping forceps, Punch Biopsy forceps, which can be operated through the scope. In addition to these other general instruments that are used for minor surgical procedures should also be available. The light sources, suction apparatus, irrigating fluid should also be kept ready.

Approaches

Arthroscopy is done commonly in the knee joint. The standard usual approach is the inferolateral. The anatomical landmark is 1 finger breadth above the tibial plateau and lateral to patellar tendon. The other approaches are supero-lateral, inferomedial and central.

Procedure

After preliminary preparation and anaesthesia the patient is draped in the routine way. The pneumatic tourniquet is applied above the thigh which will be inflated only during operative procedures. After selecting the mode of approach a stab incision is made and the canula is introduced with the help of sharp trocar. After piercing the capsule the sharp trocar is replaced by the blunt trocar and the joint cavity is entered. Now, the synovial fluid can be collected for analysis by removing the trocar. After this, the trocar is replaced by the Arthroscope. Now the joint cavity is inspected. At this juncture the cavity is to be distended using the fluid or gas medium. The gas that is usually used is carbondioxide and the fluid is Ringer Lactate solution.

Now, the surgeon does the arthroscopic investigation and surgery if necessary. If the cavity is not visualised properly irrigation with Ringer Lactate fluid is repeated twice or thrice. At the end of the procedure the joint cavity is irrigated again with Ringer Lactate and the cavity is thoroughly evaluated using the suction. After the removal of the scope usually one or two stitches may be needed for the skin closure and a compression bandage is applied over the wound. It is possible to take photography of the joint and its structure through the Arthroscope.

Findings :

One usually looks for the presence of foreign bodies, status of the synovium, cartilage and meniscus and various types of synovial hypertrophy. Synovial hypertrophy may be graded from Gr. 0 to Gr. IV. The cartilage lesion can also be accordingly graded from Gr. 0 to Gr. V. Meniscus tears should be noted and recorded accordingly.

The Role of Nurse in Arthroscopy can be Classified as Follows :

1. Preparation of the Theatre.
2. Sterilization and care of Arthroscopy equipment.
3. Preparation of non-sterile accessory equipment.
4. Preparation of the patient.
5. Post-Arthroscopy patient care.

1. Preparation of the Theatre

Arthroscopy is an invasive procedure in which instruments are passed into the joint already vulnerable to sepsis. For this reason, care must be taken to avoid introducing infection. It is not a bedside or outpatient procedure and should only be performed in an operation theatre, scrupulous asepsis with scrubbed and gowned operators and assistants are essential. Any observers similarly must wear proper Operating Theatre clothing. The nurse should properly prepare and maintain the Operation Theatre for Arthroscopy in the same way as for other major surgical procedures.

2. Sterilization and Care of Arthroscopy Equipment

One nurse should have responsibility for care and sterilisation of Arthroscopy equipment. There are many different components which are easily damaged or lost when handled by staff not familiar with them.

The care of the Arthroscope does not differ significantly from one type to another. All the components with the exception of the optical system can be sterilized in the autoclave. The optical system can be sterilized in various ways. The method which is most satisfactorily used is to place the optical component in a closed vessel containing formalin tables. Complete sterility is ensured after 24 hours in formalin gas. The optical system can be used immediately. Other than Formaldehyde Vapour, a number of liquids have been developed for cold sterilization. 2% Aqueous Glutaraldehyde (Cidex) seems best for cold sterilization. Another possibility is gas sterilization with Ethylene Oxide. Automatic Ethylene Oxide sterilizers are now available in foreign countries and full sterilization can be achieved in one hour at 55°C.

Due to non-availability of gas sterilizer Arthroscopy optical system is sterilized by using Cidex or Formaldehyde Vapour at the Department of Rheumatology, Madras Medical College and Government General Hospital, Madras.

Both gas and cold method of sterilization have the disadvantage that the arthroscope can be used for more than one investigation daily. If faster sterilization is required the optical system can be immersed in a rapid active disinfectant. This sterilizes the instruments within 5 minutes and thereby makes it possible to carry out several arthroscopies in rapid succession. With this method the risk of infection is most surely to be greater.

The care of the instrument includes cleaning and lubrication of the small taps on the side of the outer tube. Whenever the instrument has been used the taps should be tested and the optical system should be checked to ensure that the image is clear. Care of the biopsy forceps is also important since the tiny joints can easily get stuck up. The complete instrument set is immersed in preserve solution for 30 minutes before packing them for sterilization to prevent rusting.

3. Preparation of the Non-Sterile Accessory Equipment

Prior to Arthroscopy, the cold light source, the solution to be infused into the knee joint, the suction pump and the carbondioxide cylinder with its pressure reduction valve have to be installed. The scrub nurse passes the sterile Arthroscope coupling to an assistant for attachment. This assistant is also responsible for servicing the accessory equipment including the non-sterile camera. Above all, she must ensure that all the connectors between the sterile and non-sterile sections of the inlet and drainage tubes fit perfectly in order to prevent leakage of water or gas to get satisfactory Arthroscopy.

4. Preparation of the Patient

Preparation includes physical preparation as well as mental preparation. Physical preparation again depends upon the anaesthesia that is going to be used for the patient. Before sending the patient to the Anaesthesiologist, biochemical analysis of blood for sugar and urea, haematological investigations and urine analysis are done. If Arthroscopy is to be done under general or spinal anaesthesia midnight fasting and small evacuation enema in the early morning is essential, and if it is under local anaesthesia simple midnight starvation is enough. Skin preparation includes previous day shaving and cleaning of the knee joint from a point approximately 20 cm above the knee cap to a point approximately 20 cm below it. On the day of Arthroscopy morning bath followed by skin preparation of the knee joint with Tri cetavlon and sterile towel or bandage is applied over the prepared area. As a routine measure if Arthroscopy is done under spinal anaesthesia the lower part of the back also should be shaved and cleaned. Other physical preparations are the same as for other surgical procedures. The nurse should make sure that Inj.

Tetanes Toxoid is given for the patient before the procedure.

Mental preparation helps the patient to undergo this procedure with least fear or complex.

Post-Arthroscopy Care

Being a short procedure, the patient may regain consciousness on the table itself. The patient can be received in a corner bed of the ward itself. Care should be taken to prevent vomiting entering into the trachea, when the patient is recovering from anaesthesia and also tongue falling back resulting in asphyxia. As a routine vital signs are to be recorded every $\frac{1}{2}$ hour for 24 hours. Careful watch should be kept for bleeding over the site. The nurse should watch whether the compression bandage gives only required compression and not too tight which can arrest circulation to the parts that are distal to the bandage. This compression can be released after 72 hours and a single sterile dressing over the stitches may be applied. The Ward environment should be clean and post-arthroscopy infection should be prevented. The patient and his family needs health teaching to avoid infection. Stitches are removed on the tenth day and the patient may be advised bath. No dietary or ambulation restriction is necessary after 24 hours.

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Trophies Galore !

Sr. Nancy, President, TNAI, Kerala Branch, receiving Major Dalhy's Shield, awarded to the Most Active State Branch in India, on the occasion of the Biennial Conference of TNAI, held at Hyderabad in October 1985.

She also received Zohra Trophy, awarded to the State Branch for enrolling the highest number of members for TNAI.

