

Arthroscopy in sports medicine

DR PABITRA KUMAR SAHOO, ASSISTANT PROFESSOR (PMR)

Sports medicine is a special branch of rehab specialty which deals with training in anatomy, biomechanics, pathophysiology of musculoskeletal injuries and functional rehabilitation. Besides bony injuries, soft tissue injuries are some of the most chronically painful injuries seen in athletes. Those injuries are difficult to treat because it is very difficult to see what is going on under the skin with the soft connective tissues, fascia, joints, muscles and tendons. None of the radiological investigations confirms the exact nature of injury. Quite often these injuries are properly diagnosed and most effectively managed through arthroscopy. The Sports Medicine and Arthroscopic Surgery Service provides comprehensive evaluation and management for a wide range of sports injuries to the knee, foot, ankle, shoulder, elbow, and hip.

Arthroscopy is a surgical procedure orthopaedic surgeons use to visualize, diagnose and treat problems inside a joint. The word arthroscopy comes from two Greek words, "arthro" (joint) and "skopein" (to look). The term literally means "to look within the joint. In 1918, in the first instance of endoscopy of a joint Dr Kenji Takagi of Tokyo university viewed the interior of a cadaver knee joint using a 7.3mm cystoscope and considered as first arthroscopist in history of arthroscopy. In 1920 he modified a cystoscope and there by developed the first arthroscope. Dr Eugen Bircher, a Swiss surgeon published the first report on clinical arthroscopy in 1921.

" In an arthroscopic examination, an orthopaedic surgeon makes a small incision in the patient's skin and then inserts pencil-sized instruments that contain a small lens and lighting system to magnify and illuminate the structures inside the joint. Light is transmitted through fiber optics to the end of the arthroscope that is inserted into the joint. By attaching the arthroscope to a miniature television camera, the surgeon is able to see the interior of the joint through this very small incision rather than a large incision needed for surgery.

The television camera attached to the arthroscope displays the image of the joint on a television screen, allowing the surgeon to look, for example, throughout the knee at cartilage and

ligaments, and under the kneecap. The surgeon can determine the amount or type of injury, and then repair or correct the problem, if it is necessary. Diagnosing joint injuries and disease begins with a thorough medical history, physical examination, and usually X-rays. Additional tests such as an MRI, or CT also scan may be needed. Through the arthroscope, a final diagnosis is made which may be more accurate than through "open" surgery or from X-ray studies. Although the inside of nearly all joints can be viewed with an arthroscope, six joints are most frequently examined with this instrument. These include the knee, shoulder, elbow, ankle, hip, and wrist. As advances are made by engineers in electronic technology and new techniques are developed by orthopaedic surgeons, other joints may be treated more frequently in the future.

Disease and injuries can damage bones, cartilage, ligaments, muscles, and tendons in and around the joints. Some of the most frequent indications of arthroscopic surgery are:

Knee joint:

- Reconstruction of anterior & posterior cruciate ligament
- Partial or complete meniscectomy
- Loose body removal
- Chondroplasty in osteochondral defects
- Excision of plicas
- Synovectomy and synovial biopsy
- Correction of patellar mal tracking
- Arthrolysis of joint

Hip joint

- Synovial biopsy
- Removal of loose body

Ankle joint

- Chondroplasty in osteochondral defects

- Correction of anterior impingement
- Loose body removal
- Synovectomy& synovial biopsy

Shoulder joint

- Diagnosis of the cause of shoulder pain
- Shoulder stabilization in recurrent dislocation shoulder
- Debridement of loose labrum from glenoid
- Loose body removal
- Excision of acromioclavicular joint
- Subacromian decompression

Elbow

- Synovectomy
- Removal of loose body
- Release of stiff elbow

Wrist

- Debridement of torn triangular fibrocartilage
- Carpal tunnel syndrome
- Synovial biopsy & synovectomy

Arthroscopic surgery, although much easier in terms of recovery than "open" surgery, still requires the use of anesthetics and the special equipment in a hospital operating room .

A small incision (about the size of a buttonhole) will be made to insert the arthroscope. Several other incisions may be made to see other parts of the joint or insert other instruments.

When indicated, corrective surgery is performed with specially-designed instruments that are inserted into the joint through accessory incisions (figure1). Initially, arthroscopy was simply a

diagnostic tool for planning standard open surgery. With development of better instrumentation and surgical techniques, many conditions can be treated arthroscopically(Figure 2).

The amount of surgery required and recovery time will depend on the complexity of the problem. Occasionally, during arthroscopy, it may be found that the injury or disease cannot be treated adequately with arthroscopy alone. The extensive "open" surgery may be performed while the patient is still anesthetized

Arthroscopy has a steep learning curve. One has to work in a joint which is a small closed space and maneuvering the scope as well as instrument is difficult. Rough movement can cause damage to intra articular structures or breakage of delicate instruments. Equipments used for arthroscopy are expensive and delicate (Figure 3).



Fig:1-shoulder arthroscopy



Fig:2- Arthroscopic view of ACL



Fig:3-Instruments for shoulder arthroscopy

