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Arthroscopy: an Outpatient Procedure

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Abstract

Steerable robotic tools have extra degrees of freedom, such as bending and rotation, which help to reach and perform the intended procedure with ease. These will have sensors which Autonomous leg manipulators will have algorithms fed into the system depending on the surgeon preference, type of surgery, and stage of surgery. This along with sensors placed outside the knee, and in the arthroscopy, will allow the leg holder to position the knee accurately.

Keywords: Knee surgery; Robotic tools; Regenerative medicine; Allografts; Arthroscopy; Pain medications

Introduction

Robotic tools need depth realization to work in space. Hence, miniature stereoscopic cameras are being developed to gain depth information. Along with 3D/4D ultrasound modalities being developed, they will help in mapping the anatomy of the soft-tissue inside and outside the knee such as the ligaments, menisci, neurovascular structures, and tendons to allow for surgery. An extension of the robotic technology may in the future allow for full autonomous surgery under the supervision of an expert. Recent advances in arthroscopic knee surgery have enabled accurate restoration of anatomy with successful techniques involving repair, reconstruction, and replacement. With research and studies progressing in multiple directions, better outcomes in biological repair and augmentation can be expected in the future. Rapid strides in tissue engineering, regenerative medicine, and understanding of cellular mechanism, may help in the future to obviate the need for harvesting autografts and allografts [1]. Arthroscopic surgery, although much easier in terms of recovery than open surgery's till it requires the use of anaesthetics and the special equipment in a hospital operating room or out-patient surgical suite. The patient is given a general, spinal or local anaesthesia, depending upon the joint or suspected problem. In an arthroscopic examination, a surgeon makes a small incision in the patient's skin and then inserts pencil-sized or smaller instruments that contain a small lens and lighting system to magnify and illuminate the structures inside the joint [2]. Light is transmitted through fiber optics to the end of the arthroscope that is inserted into the joint. By attaching the arthroscopy 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 open surgery.

Discussion

The television camera attached to the arthroscope displays the image of the joint on a television screen, allowing the surgeon to look throughout the joint at cartilage as well as ligaments and in the tight spaces. The surgeon can determine the amount or type of injury and then repair or correct the problem, if it is necessary. When indicated, corrective surgery is performed with specially-designed instruments that are inserted into the joint through additional incisions. 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. After arthroscopic surgery the small incisions are either sutured or a sterilized dressing is applied. The patient is allowed to move, the moment the effect of the anaesthetic drugs is worn out [3]. Many patients need little or no pain medications. The patient can be discharge in the same evening or in 1-3 days depending-upon the type of surgery. If sutures are applied, these are removed after l0 to 12 days after surgery. Rehabilitation program and recovery time depends upon the type of indication. In majority of the problems, patient is back to pre-surgery status in 2-3 weeks. Although uncommon, complications do occur occasionally during or following arthroscopy. Infection, phlebitis(blood clots in a vein),excessive swelling or bleeding, damage to blood vessels or nerves and instrument break age are the most common complications, but occur in far less than 1o/o of all arthroscopic procedures [4]. Arthroscopy is a key hole surgery and is the most commonly performed orthopaedic procedure. Its advantages are minimal hospital stay, minimal complications and early return to work. The most common joints for arthroscopy are the knee and shoulder, but other joints such as elbow, wrist, ankle and hip are also diagnosed and treated by arthroscopy. With arthroscopy, there is hardly any morbidity. The revolution in arthroscopic surgery began in 1919 and now it has reached the stage at which arthroscopy must be considered as one of the greatest achievements in orthopaedic surgery in the last century. This along with arthroplasty has changed the whole outlook of the orthopaedic patients [5]. Arthroscopic surgery has also received a lot of public attention because it is used to treat well-known sports personalities. It is an extremely valuable tool for all orthopaedic surgeons and is generally considered easier to perform than 'open surgery', but the learning curve is prolonged one. Arthroscopy is one of the most commonly performed procedures in any orthopaedic practice throughout the world. With the invention of better systems of illumination and the advancements in the camera systems, the indications of the procedure are increasing day by day. Having started with the knee joint, presently it is being employed in almost all the synoviul joints' [6]. However, knee and shoulder are more popular sites for arthroscopy. With the introduction of small diameter-scopes, the ailments of smaller joints such as wrist, ankle and small joints of hand

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are also being inclucled in the list of indications for arthroscopy. Being an out-patient procedure usually' it has revolutionized the treatment of joint pathologies by reducing post-operative morbidity und the hospital stay. The word arthroscopy comes from two Greek words, o'arthro (joint) and skope in (to look)'. The term literally means to look within the joint lt is a technique of visualizing the joint cavities with the help of an endoscope. The technology is basically the same as used by urologists/general surgeons/ gynaecologists for doing cystoscopy or laparoscopy. The earliest evidence of exploration of the human body cavities is documented by references to vaginal speculum in the ancient Hebrew literature and by the use of proctoscopes in the ruins of Pompeii. However, the bladder being the first organ to be tried for viewing, Botzini (1773-1809) in 1806 presented his Lichtleiter in Vienna which was not appreciated well by the medical community [7]. Continuing the efforts, Desirmaux (1815-1882) in 1853, presented another endoscope for visualization of bladder. Both these scopes were illuminated by direct flame light i.e. candle in the former one, turpentine and alcohol being burnt in a combustion chamber in the latter. In 1880,Max Nilze (1848-1906) developed the first modern cystoscope, where platinum loop heated by electricity encaged in a water cool goose (container) acted as the light source. But, the first milestone in the science of endoscopy, evolved with the invention of incandescent lamp by Edison in 1880. It started the era of evolution of cystoscopy; arthroscopy, earlier known as arthro-endoscopy, was the second evolution. The first possibility of looking into the joint was mentioned by the Swedish scientist Jacob eusin 1912, in his look about laparoscopy and thoracoscopy. But the actual application of the technology on cadaveric knees was done in 1913-1914and on living patients in l92l which has been reported to be tried by Eugen Bircher by using a 90 degree endoscope. Unable to see all the regions of the knee joint by the 90 degreescope, Bircher gave up arthroscopy in 1930 and developed the arthrography of the knee. In 1919, prof Kenji Takagi (I 8S8_I 963) of Tokyo University visualized the knee joint of a patient by using7.3 mm cystoscope [8]. He developed his own scope and in July 1932, he presented his endoscope to Japanese Orthopaedic Association in Tokyo. Subsequently, Dr. Masaki Watanabe (lg2t_1994), a student of Prof Thkagi continued working on this technology and developed a series of newer arthroscopes. The era of modern arthroscopy commenced in l9S7 with the development of No. 2l arthroscope by Watanabe and with the publication of the first edition of Watanabe, so, Atlas of Arthroscopy, In 1974, the International Arthroscopy Association(IAA) was founded in Philadelphia with Prof. Watana be being the first Chairman. With improvements of arthroscopes, light sources and higher-resolution cameras, the procedure has become highly effective for the accurate diagnosis as well as for proper treatment of joint problems. Today, arthroscopy is one of the most common orthopaedic procedures in the United States with more than 1.5million knee arthroscopies being performed each year [9]. With the growing number of young enthusiastic arthroscopists and evolution of better instrumentation, the basic technology developed for the knee joint has been applied to shoulder, ankle, hip, spine and to all the other joints of the body. Piagnosing joint injuries and disorders begins with a thorough medical history, physical examination and X-Rays of the joint. Additional tests such as CT scan or MRI may also be needed. Through the arthroscope, a final diagnosis is made which maybe more accurate than the one made through, open surgery or from imaging studies. Disease processes and injuries can damage bones, cartilage, ligaments, muscles and tendons. 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.

Conclusion

As advances are being made in electronic technology, new techniques are likely to be developed by orthopaedic surgeons and other joints may be treated more frequently in the future.

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Conflict of Interest

None

References

1. Cohen SP, Mao J (2014) Neuropathic pain: mechanisms and their clinical implications. BMJ UK 348:1-6.
2. Mello RD, Dickenson AH (2008) Spinal cord mechanisms of pain. BJA US 101:8-16.
3. Bliddal H, Rosetzsky A, Schlichting P, Weidner MS, Andersen LA, et al. (2000) A randomized, placebo-controlled, cross-over study of ginger extracts and ibuprofen in osteoarthritis. Osteoarthr Cartil EU 8:9-12.
4. Maroon JC, Bost JW, Borden MK, Lorenz KM, Ross NA, et al. (2006) Natural anti-inflammatory agents for pain relief in athletes. Neurosurg Focus US 21:1-13.
5. Birnesser H, Oberbaum M, Klein P, Weiser M (2004) The Homeopathic Preparation Traumeel® S Compared With NSAIDs For Symptomatic Treatment Of Epicondylitis. J Musculoskelet Res EU 8:119-128.
6. Ozgoli G, Goli M, Moattar F (2009) Comparison of effects of ginger, mefenamic acid, and ibuprofen on pain in women with primary dysmenorrhea. J Altern Complement Med US 15:129-132.
7. Świeboda P, Filip R, Prystupa A, Drozd M (2013) Assessment of pain: types, mechanism and treatment. Ann Agric Environ Med EU 1:2-7.
8. Nadler SF, Weingand K, Kruse RJ (2004) The physiologic basis and clinical applications of cryotherapy and thermotherapy for the pain practitioner. Pain Physician US 7:395-399.
9. Trout KK (2004) The neuromatrix theory of pain: implications for selected non-pharmacologic methods of pain relief for labor. J Midwifery Wom Heal US 49:482-488.