Compensation of a Disability After Arthroscopy & Total Ankle joint Replacement

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ABSTRACT
The quality of life may involve questions about the meaning of life; characteristics of the natural and social environment of the human being; the physical and mental states of the human being; as well as subjective evaluation of life - personal comfort and satisfaction. The authors discuss the possibility of indications for surgical Arthroscopy for simple ankle injury and implantation of total endoprosthesis for complicated arthrosis. In addition to indicating the criteria, this article deals with the anatomy of ankle joint; description of the operational procedures; access ports in Arthroscopy; anterior approach of total endoprosthesis.

Keywords: ankle Arthroscopy, total endoprosthesis of ankle joint

Introduction
Arthroscopy, as a method of diagnosis and surgery of intra-articular damage, achieved enormous development in the last 10 years; became superior to conventional surgical methods; has a firm place in Orthopedics and Traumatology mainly because of minimal limitations. In the magazine "Arthroscopy", F.A. Barber indicates Arthroscopy as a method of minimally invasive surgery which allows for a thorough diagnosis and visual objectification of damage to the structures of ankle bends.

The number of ankle injuries is increasing with increased mechanization and propulsion. Also, elevated physical activity; with excessive obesity; increased demands on performance in sports and competitions; in today's accelerated pace of life, the number of work and domestic accidents is growing.

Physical examination and X-ray can give reliable diagnostic data of the ankle joint. Some authors - M.S. BURMAN (2001) indicate that the accuracy of basic X-ray examination diagnosis is only 50%, sometimes up to 80%; the method of Arthrography can have sensitivity of about 80%.

Another method of ankle examination is ultrasound. The results are encouraging - about 85% to 90% of successful diagnosis particularly when examining smooth structure of tendons and ligaments of the ankle (Johnson, LL 2000). MRI is a very reliable and accurate non-invasive method which achieves a very high success rate in determining a diagnosis. The correct results of indicated percentages of sensitivity are up to 95%. Non-invasive methods such as ultrasound, CT and MRI, however, depend on the availability and the experience of a Radiodiagnostic Doctor. MRI is limited either by cost and also by a limited number of tests.

Embryonic Development
Cartilaginous distal ends of the tibia and fibula are differentiated in the 6th week and create a symmetric fork. At the same time, foundations of the talus are differentiated. Definitive form of the ankle is achieved in 4th month of fetal life, lateral malleolus even later (Chapman, 2004).

Ossification
Ossification occurs in the distal part of the tibia and fibula in fetal life and at the same time and similarly to embryonic development. Tibia and fibula in newborns does not have the distal epiphyseal ossification nuclei developed. Respective growth plates have a smooth
transversal course. Ossification nuclei of the tibia occurs in the 3-24 months, stored in the central part of the epiphysis. Nucleus of fibula appears around 6-36 months. The core of tibia extends at the end of fifth year of life. In the 6th-7th year of life ossification nucleus of the tibia gradually extends to the base of the internal ankle. In the 8th-10th year already a big part of the inner ankle is ossificated. This process is completed in puberty when gradual closure of physes appears (Harty, 1994). Ossification nucleus of the talus is clearly visible at birth, and in the first to third month the size increases and is hour-glass shaped. In 8th year of life it is visible via X-ray and the shape of talus is identical to adults.

**Fig.1 - Motion range of the ankle**

### Indications and Contraindications

Arthroscopy of the ankle joint may be indicated whenever a physician suspects that a patient's discomfort is resulting from damage to the structure of the ankle: namely disorders of cartilage, ligaments and synovium. It can be indicated for diagnostic or therapeutic purposes, in the acute or chronic phase. Jackson states that 25% of diagnostic Arthroscopy also have a therapeutic effect. Arthroscopy may be indicated when we cannot reach a diagnosis by other, non-invasive means. Sometimes even negative X-ray findings are suggesting malfunction of synovium, cartilage or ligamentous apparatus. Generally we can summarize indications for Arthroscopy of the ankle joint to these points:

- Hemarthros of ankle of traumatic origin
- X-ray negative blockade of the ankle joint
- Removing lesions of meniscus
- Damage of chondral surfaces of joint
- Loose articular corpuscles
- Unclear chronic difficulties with ankle joint, unmanageable by conservative treatment
- Extraction of synovial for histology and overall synovialectomia
- Adhesiolysis
Removal of osteophytes
Debridement of primary or traumatic arthrosis
Septic inflammation of the ankle joint
Intra-articular assessment of clinically unstable ankles before stabilization

Additional indications include traumatic ankle pain with limited movement after injury; arthritis with free intra-articular corpuscles; intra-articular adhesions; osteochondral defects; impingement exostosis of the talus or tibia. Atraumatic are neoplastic lesions of tibia, fibula or metabolic disorders of the ankle such as diabetes.

Arthroscopic examination of the ankle joint has a minimum number of contraindications. Absolute contraindication is total damage of the articular case because of the possible occurrence of compartment syndrome. Relative contraindications are due to using avascular environment, for example deep venous thrombosis, severe atherosclerosis of lower limbs or vascular bypass in this area. However, without using of tourniquet, it is possible even in these vascular disorders to perform arthroscopic surgery. Other relative contraindications are systemic infections, significant osteoarthritis, Sudeck's Syndrome.

Complications of Ankle Joint Arthroscopy:
Each operation on the ankle is burdened by a number of complications which every Surgeon tries to eliminate to minimum; arthroscopic surgery is no exception. Main complications are:

- Hemarthros
- Septic arthritis
- Infection of surgical wounds
- Compartment Syndrome
- Tourniquet Syndrome
- Nerve disorders
- Vascular disorders
- Tromembolické complications
- Tool damage
- Iatrogenic damage to the cartilage of the ankle joint

General occurrence of complications is around 0.60% to 1.70% in literature. In the Central Military Hospital in Ruzomberok the rate is from 0.5% to 4% of complications. The most common complication at our Department is hematoma of the ankle joint, occurring in 4% of cases; thromboembolic disease recognized in 0.8% of cases; neurological disorders in 0.4%, 0.1% infections.

Table 1.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Rate</th>
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<tbody>
<tr>
<td>Hematoma</td>
<td>4.0%</td>
</tr>
<tr>
<td>Thromboembolic disease</td>
<td>0.8%</td>
</tr>
<tr>
<td>Nerve disorders</td>
<td>0.4%</td>
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<tr>
<td>Infections</td>
<td>0.1%</td>
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<tr>
<td>Vascular damage</td>
<td>0</td>
</tr>
<tr>
<td>Tools damage</td>
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In general, we can state, that ankle joint Arthroscopy is an operation burdened only with a small percentage of complications. To reduce the incidence of complications this method requires good skills and operations management techniques by the Surgeon. Very important is correct and timely evaluation of the indication for surgery. Some authors are dividing complications to preoperative and postoperative (Patty JE, 1996):
Preoperative Complications:
- Operations on the wrong ankle
- Tourniquet Syndrome
- Incorrect determination of operational approaches
- Technique of operation and damage to instruments
- Intra-articular bleeding
- Articulating cartilage damage
- Neurovascular damage
- Damage to ligaments and tendons

The Principle of repeatedly ensuring whether operating on the correct limb should always be paid attention to. Usually, for a clear view and for bleeding management, we use a tourniquet during the operation. Sometimes, as a complication, pain or paresis can occur on an operated limb in the area of tourniquet placement. We did not experience damage to instruments, however instruments with smaller diameter should be used, namely from 2.7 to 3.4 mm. Intra-articular bleeding usually occurs with removing synovia. If the bleeding is massive, we use electro-cautery in a non-conductive environment with a 5% glucose infusion. Intra-operative damage to cartilages are usually small abrasions of cartilages, therefore surgeons should be careful when using shavers and other sharp objects such as trocars. Neurovascular damage may potentially be realistic because the standard approaches to the ankle are near major nerves and blood vessels. Using an anterolateral approach may damage a branch of the peroneal nerve and using an anteromedial approach can damage the saphenous nerve. When a dorsal approach is used, surgeons should be aware of the details of the posterior tibial nerve and the sural nerve. Therefore, dorsal approaches must be conducted right next to the Achilles tendon.

Postoperative complications:
- Hemarthros
- Postoperative edema and effusion
- Infection in the joint
- Wound infection
- Thromboembolism
- Compartment syndrome
- Reflex sympathetic dystrophy
- Postoperative stress fracture

Hemarthros is one of the most common complications after arthroscopic surgery of the ankle. NSAIDs should be discontinued preoperatively, as well as Anopyrin, often used by Cardiologists. These drugs should be discontinued at least 3 days before surgery. Special attention should be paid to patients with known hemo-coagulation disorders, such as hemophilia. Usually only minimal edema and effusion after operation is present. It’s usually benign and caused by extravasation of flushing solution into the subcutaneous tissue which is rapidly absorbed. In an occurrence of intra-articular swelling, puncture should be considered, especially when recurrent and a sample is usually sent for biochemical and microbiological analysis.

At our Center, a joint infection occurred once; managed by flushing with drainage of solutions and antibiotics. Most common are inflammations of small incisions, which are characterized by redness of the surrounding; sometimes slight swelling and itching is present. These are most commonly coped well by antibiotic therapy.
In our Department, postoperative inflammation of the veins was recorded in about 0.8% of the total operated. After verification by ultrasound of the venous system, inflammation is usually coped with treatment according to a diagram using of low molecular weight heparins. Compartment Syndrome, reflex sympathetic dystrophy and postoperative stress-fracture have not been recorded at our Clinic. Reflex dystrophy is described in our literature as Sudeck Syndrome.

**Severe Disability Compensations**

In addition to health problems, severe disability (hereinafter referred to as "SD") also has negative effects and impact on the exposed persons and the associated disadvantaged society. These states e try to compensate in different ways. Compensation of social consequences (hereinafter referred to as "compensation") of disabled persons under Act no. 447/2008 is done to mitigate or overcome the social consequences of severe disability by providing cash benefits to compensate for severe disability:

- financial compensation benefits,
- social services under the Act on Social Services.

Social consequences of severe disability are compensated in the following areas:

- Mobility and orientation,
- Communication,
- Increased expenses,
- Self-servicing.

In the field of *mobility and orientation*, compensation is for reduced physical orientation or for ability to alleviate or overcome disadvantages in access to personal items and to facilitate orientation and relocating in buildings (Slovak, 2009).

In the field of *communication*, compensation is for impaired communications to enable contact with the social environment; make access to information more available for a person.

In the field of *increased supplemental spending*, compensation is offered, for example, for a special diet; increased expenses related to hygiene; clothing, footwear and household equipment; operation of a motor vehicle; care of a specially trained dog. The aim is to mitigate the consequences of regular increased expenses associated for the severely disabled.

For the *self-servicing*, compensation is for the loss of limited ability of self-servicing in order to provide a person with a severe disability assistance for self-servicing acts in cases where such persons are alone as a result of damage or loss of physical, sensory or mental capabilities cannot ensure self-servicing operations; care of their home; basic social activities.

Assessment activity in order to compensate severe disability: the issuing of an ID Card for a person with a severe disability; parking card; and others, is under-medical activities and is carried out by the Medical Assessor and a Social Worker of the Office of Labor, Social Affairs and Family, or by other invited experts.

People with severe disabilities shall be entitled to various discounts and benefits. This are claimed with an ID Card of the person with severe disability. There is also a special license for disabled persons with need of an assistant, marked with red color.

For a person with a severe disability or who has partial or complete blindness of both eyes, who is considered dependant on a final decision for individual transport by car, the competent Authority on Parking Passes shall prepare a Parking Pass. A person with a severe disability is
dependant on individual transport by car if him/her is not on an equal basis with other persons with respect for their inherent dignity:

to move back and forth to a vehicle of public transport or rail transport,
to enter a vehicle of public transport and rail transport; stay in it while driving;
and step out of the vehicle,
to handle the other severe health situations in the vehicle of public transport or
rail transport, especially because of behavioral disturbances in mental disorders,
vertebrobasilar insufficiency with severe dizziness, loss of two and more limbs,
severe cardiopulmonary insufficiency or severe sphincter disorders.

Request for a financial contribution for compensation should be made in writing to the competent Authority of the Office of Labor, Social Affairs and Family by a disabled person, or for a child by a parent or a person who has been awarded custody of him/her.

The application must include:
name and surname of the person applying for the grant of financial compensation benefits, including date of birth,
their personal identification number (if assigned),
address of their permanent or temporary residence,
proof that they are citizen of the Slovak Republic with permanent or temporary residence in Slovakia, or an alien who meets the conditions,
medical record.

Conclusion:
It’s important for every patient after Arthroscopy to live a full life and to have a secured integration into society despite his/her health restrictions (Slovák, 2011). That is why compensation benefits were developed and their use significantly contributes to improving the quality of life.

References:
Law #447 (2008) on cash benefits to compensate for severe disability and on amendments to certain Laws.
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