TREATMENT OF GONARTHROSIS BY TOTAL KNEE ARTHROPLASTY

Z. Golubovic1, M. Mitkovic1, L. Macukanovic-Golubovic1, I. Micic1, P. Stojiljkovic1, K. Kutlesic-Stojanovic1, A. Lesic2, M. Bumbasirevic2, S. Stamenic1, S. Karalejic1, M. Todorovic1, A. Visnjic1
Clinic for Orthopaedic Surgery and Traumatology, Clinical Center Nis, Faculty of Medicine, Nis, Serbia and Montenegro
Institute for Orthopaedic Surgery and Traumatology, Clinical Centre of Serbia, Belgrade, Serbia and Montenegro2

ABSTRACT
Gonarthrosis is a progressive chronic arthropatic disease of the knee which includes degenerative changes of the knee cartilage and hypertrophic changes of the bone tissue around the articular surface. The onset of the disease is insidious and vague. As the condition progresses, clinical signs became more significant like weakness of musculus quadriceps, flexion contracture of the knee joint, and valgus or varus deformity of the knee. Radiological changes of the osteoarthritic knee are narrowing of the joint space, sclerosis of the subchondral bone, osteophyte formation and in the terminal stadium cystic degeneration of the subchondral bone. In period from the 30.08.1999 to 30.08.2004 year at the Clinic of the Orthopaedics and Traumatology of Clinical Center of the Nis were treated 10 patients with gonarthrosis by total replacement arthroplasty of knee joint. In all patients implant was produced by the company Johnon-Johnson. After undergone replacement surgery of the knee joint, patients were relieved from the continous pain, and had stabile and secure gait with optimal movement of the recplace knee joint in all direction. Excellent and very good results in the treatment of the osteoarthritic knee by total replacement arthroplasty were reported in nine patients, and there were postoperatively infection of the wound only in one patient.

Introduction
Gonarthrosis is a progressive chronic arthropatic knee disease characterized by knee cartilage degenerative changes and hypertrophic changes of bone tissue around articular surface. Among all the big joints, arthropatic changes mostly appear at knee joints. Autopsy examinations have showed arthritic changes of knee in 75% of the cases and of hip in 33% (1).

Pathoanatomic changes are first knee cartilage degenerative changes and then parallel development appear of regressive and reactive cartilage and bones changes. Disproportional loss of knee cartilage from medial or lateral condil leads to the appearance of secondary deformations in varus or valgus position and in the advanced stage knee extension and flexion also appears (2). Pain dominates and also rigidity of knee joint in the clinical picture of the patient with gonarthrosis. Because of its mass appearance, sickness duration and invalidity gonarthrosis therapy is always topic for discussion (3,4).

In gonarthrosis treatment, beside hygienic and diet measures, physical therapy, non-steroid anti-rheumatics significant place is left for surgical treatment and implanting of total replacement arthroplasty of knee joint (5).

Materials and Methods
The aim-objective of our work is to show the treatment results of ten gonarthrosis
patients at the Clinic of the Orthopaedics and Traumatology of Medical faculty of Nis with the total arthroplasty replacement produced by Johnson-Johnson orthopaedics limited.

In order to realize the determined objective, retrospective analyses of the patients with gonarthrosis were made. The patients were from the group treated at Clinic of the Orthopaedics and Traumatology of Medical faculty of Nis in the period from August 30 1999 to August 30 2004. They were treated with total replacement arthroplasty of knee joint of Johnson and Johnson orthopaedics limited. In the stated period 10 patients were treated with the total replacement arthoplasty of knee joint. With this work analyses the patients who had had total replacement arthroplasty of knee joint done for the rheumatoid arthritis were not taken into account.

The final result of gonarthrosis treatment with total replacement arthroplasty of knee joints was estimated by using scale of association for knee (Knee society scores) (6).

Surgical technique: The incision of the skin is frontal – along type and starts at about 10 centimeters from upper patella and distally goes to tuberosiatis tibia. The knee joint is opened with medial parapatellar incision. Patella laterally everts with the knee in extension. Knee is flectured to 90 % and meniscectomy and excision of LCA are done. Distal resection of joint femur surfaces is done and then, with the usage of appropriate instruments the frontal, lateral and sidelong recession of femur condila is done as well as the recession of condilar part.

Then we deal with joint surface of tibia with using instruments for determination of the angle or joint tibia surface as well as the thickness of marrow -joint part and resection through certain slots is done. All recessions are done with oscillatory saw. When the beds for femur and tibia are treated then the beds on patella are treated also. After the trial test the bed is implanted which goes into tibia metaphyses.

After the test done with the placement of temporary joint complements at the prepared treated surfaces of femur and tibia, the adequacy of selected surfaces of components and stability of knee joint is estimated. Test components are removed. Marrow cement is used and it is placed over the prepared layers as well as over certain parts of endoprotesis and its definite implanting is also done. It takes about 10 to 12 minutes to cement firming and also reposition is done. Joint stitch through layers. Drainage. Surgical procedure was done with turnikea.

Results and Discussion

In the period from August 30 1999 to August 30 2004 10 patients with gonarthrosis were treated with the total replacement of arthroplasty by Johnson – Johnson orthopedics limited. There were 8 females and 2 males in the analyzed group. The average age limit is 62.5 (tab 1). The youngest patient is 53 and the oldest 72 years old. Gonarthrosis incidence was a the result of joint fracture of thigh bone in the case of two patients.

The total replacement arthroplasty of knee joint in five patients was done in general anesthesia and also in the case of five patients in spinal anesthesia. The average surgical intervention length of total replacement arthroplasty of knee joint was two and half hours long. The longest duration of surgical operation was three hours long and the shortest was two hours long.

Intraoperative there were no blood losses since the operations were done with turnikea. Post surgical blood loss, followed by wound drainage in average was 470 ml of blood. Maximal loss of blood was 800 ml and minimal loss was 250 ml of blood. Average loss of the first post-operative day 400 ml of blood, and minimal blood loss was equal to zero.

By analyzing blood compensation in the patients with total replacement arthroplasty of knee joint, it has been determined that
three patients got per two units of washed erythrocytes (2*350 ml) and also three patients received plasma expander (Haemacel 500 ml). Control hematocrites were in the range between 0,24 to 0,40 (in average 0,35).

From early post-operative complications in the patients we registered tromboflebitis of lower leg which was successfully solved by transferring from low molecular heparin (Fraxarin) to oral anticoagulants (Sintrom) with the value control of INR.

We registered post-operative wound infection in one of the patients. With regular strangulation and antibiotic therapy it came to subsidence state.

In all the patients we registered excellent and good results in the treatment of osteoarthritis of the knee by total arthroplasty replacement.

Patient description: A patient, 58, ten years ago got hard intra-articular transcondylar femur fracture. Operative procedure was done, including reposition and osteosynthesis of fracture. During post operative procedure, physical therapy had been implemented and after the union of fractur osteosynthesis material was removed. Ten years after the injury and post operative treatment of the patient there was an incidence of pain and limit of moving activities in the right knee joint. In the made x-ray pictures one can see the narrowing of joint space, border osteofits, come to head intracondial eminence and border sclerosis (Fig. 1).

After the complete post-operative preparation, surgical action of implantation of total endoprotesis of right knee joint was made. In the x-ray pictures of knee joint we can see the state after the endoprotesis implantation (Fig. 2).

Knee joint is very often in the process of gonarthrosis after the 4th decade of human life. Causal factor of gonarthrosis appearance can be general or local. From local

### TABLE

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factors important are: wrong static relations of pressure, functional over-pressure (sportsmen, physical workers), overweight, stronger equally measured or frequent injuries, inflammatory processes that harm joint gristle. From general factors important are aging of organism, metabolic and hormonal disorders (7, 8, 9).

The beginning of the disease is insidious and latent. In the beginning a patient feels stiffness in the joint that further goes to pain during knee movements. Pain is getting stronger during longer physical activity and weaker in stillness periods. With the disease improvement, pains grow stronger and one moderate, in rare cases – stronger, hypotonia of four-headed muscle of upper leg is developing, mostly for the pains and during activities. We can find thicker joint capsule with palpation. During the movements of flexia and extensions we can hear more or less emphasized crepitations. Diffused crepitations, like crunching sounds of dry snow, appear in the whole joint area. Pathoanatomic changes are always first of all degenerative gristle changes and then regressive and reactive changes of gristle and bones have parallel development. In late period of gonarthrosis atrophy of four headed upper leg muscle, flexion contracture and valgus or varus knee deformity. Mobility of patella is also reduced (10, 11). In the stadium of exarabation hydrops and hypertremia of knee. Subjective disturbances are increased during the weather changes. General state is not damaged and erythrocyte sedimentation is not increased. In radiographic way we find ridged intercondilal eminence incidence, bigger or smaller marginal osteofites, narrow joint interstice, facet joint surfaces and in later stage subhondral sclerosis and degenerative cysts (12).

Treatment of gonarthrosis can be of not operative type and operative too. Not-operative procedure treatment includes limiting of activities (avoiding walking down and up the stairs and slant surfaces), reduction of body weight, anti-inflammatory drugs, disburden of joint (usage of walking stick). Operative treatment is about osteotomy to correct lower and upper leg part deformities and melting the relations in joint and total arthroplastic of knee joint (13, 14, 15).

With total replacement arthroplasty of knee joint a patient is relieved of constant pains, stabile and secure walk is provided for him as well as good range movements in operated knee (16, 17, 18).

Conclusions
Arthrotic changes are most frequent in knee joint if you consider all big human joints. Gonarthrosis is three times more frequent in females that in males. Causes for gonarthrosis appearance can be local and general. From general factors there are: the state of the organism, metabolic disturbances and climacterium. From local causing factors important are wrong static pressure, functional over-pressure (sportsmen, physical workers), overweight, trauma (intra-articular fracture), frequent minor injuries of joint (micro-trauma), inflammatory joint processes, giht and gout.

In the treatment of gonarthrosis beside hygiene – diet measures, physical therapy, non-steroid antirheumatics operative treatment takes significant place and total replacement arthroplasty of knee joint.

In the period from 30th August 1999 to 30th August 2004 ten patients were treated with total replacement arthroplasty of knee joint of Johnson and Johnson orthopaedics limited at our clinic. Average duration of surgery was two and half hours. Intraoperatively there were no blood losses (operations were done with turnikea) while post-operative blood loss (followed over drainage of the wound) in average was about 470 ml. Three patients in post-operative state got per two units of washed erytrocites and three patients got plasmaexpander.

Excellent and good results in gonarthro-
sis treatment with total arthroplasty replacement of Johnson and Johnson type were registered in all operated patients.

From post-operative complication we have one operative wound infection of the which with the help of constant wound dressing and antibiotic therapy subsided. We have also registered in patient tromboflebitis of lower leg segment that was successfully solved. The patient was further treated with low-molecular heparin (Fraxarin) and he was transferred to oral anticoagulants (Sintrom) with INR control.

REFERENCES