

A Case Report of a Patient with Severe Knee Instability, Treated with Hinge Knee Prosthesis

Fezollari L*, Caushi Gj, Asoc Ruci V, Selmani E, Cami E, Gega A, Biba G, Vellku F, Sejdini K, Memini S and Bassi G

Department of Orthopedics, University Hospital of Trauma, Tirana, Albania

***Corresponding Author:** Fezollari L, Department of Orthopedics, University Hospital of Trauma, Tirana, Albania.

Received: February 26, 2021

Published: July 28, 2021

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Abstract

A patient who is 59 years old, female with marked knee instability by 8 months after the onset of knee trauma. The patient is unable to walk normally, walking only with knee support. After a careful clinical and radiological examination special knee prosthesis (hinge prosthesis) was recommended.

Keywords: Severe Knee Instability; Hinge Knee Prosthesis; Flexion Movement

Introduction and Case Report

A patient who is 59 years old, female with marked knee instability by 8 months after the onset of knee trauma. The patient is unable to walk normally, walking only with knee support. After a careful clinical and radiological examination special knee prosthesis (hinge prosthesis) was recommended. Hinged prostheses are a solution in cases of severe instability, but their disadvantage is that they have a higher transmission of stress at the bone-implant interface and a pattern of non-physiological movement.

The femoral and tibial nails are needed to tolerate this heavy load and prevent early implant failure. Furthermore, the loaded occupied by the hinge knee prosthesis needs bone resections greater than those made in standard knee prosthesis.

The advantages of hinged knee prostheses is that combines extension and flexion movement with rotation, improving movement mechanics and reducing load transfer with fixation.

Indications

Indications for the use of a hinge prosthesis are:

- Severe ligamentous laxity with large extension gaps or flexion;

- Large bone destruction in tibial plateau or femoral condyles, with loss of collateral or ACL/PCL ligaments;
- Total rupture of one of the collateral ligaments.

Surgical technique

We used a standard medial parapatellar arthrotomy. Before cementation, abundant lavage was done, and drying with gauze. We didn't touch the patella. Patient was operated under general anesthesia.

A prophylactic antibiotic 2g Ceftriaxone was intravenously/bolus administered 30 min before surgery. Enoxaparin 0.4 ml sc for 4 weeks postoperatively was administrated.

We used tourniquet in our patient. We kept hemovac for 48h postoperatively. According to hemogram analysis blood transfusions was given.

The operation time was 122 minutes. We begin to our patient physiotherapy on the first postoperative day with passive and active ROM. By using crutches we permitted full weight-bearing from the first postoperative day. We recommended maximally for 6 weeks using crutches, after that walking freely without any support.

Results

Implanted hinge knee prosthesis was stable and functional at the time of follow-up with all components.

In follow-up, the patient knee range of motion (ROM) was full extension and flexion at least 80°.

Patient didn't develop any complication (Pulmonary emboli, periprosthetic infection, fracture during surgery, synovitis, dislocation of the prosthesis, fracture after surgery or patellar maltracking, loosening of implants).

X-ray pre-op

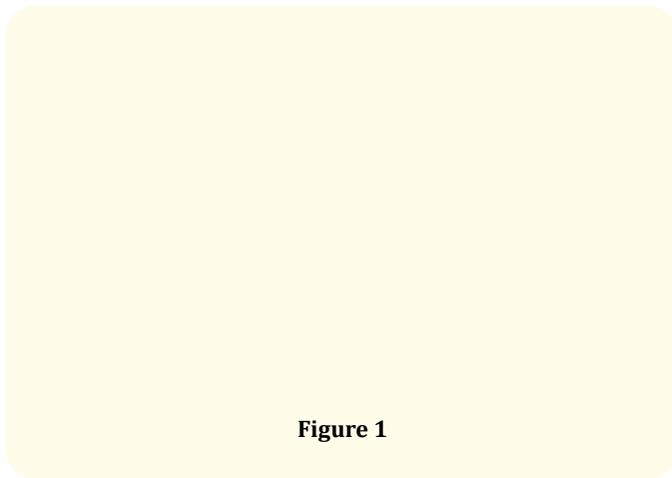


Figure 1

X-ray post-op

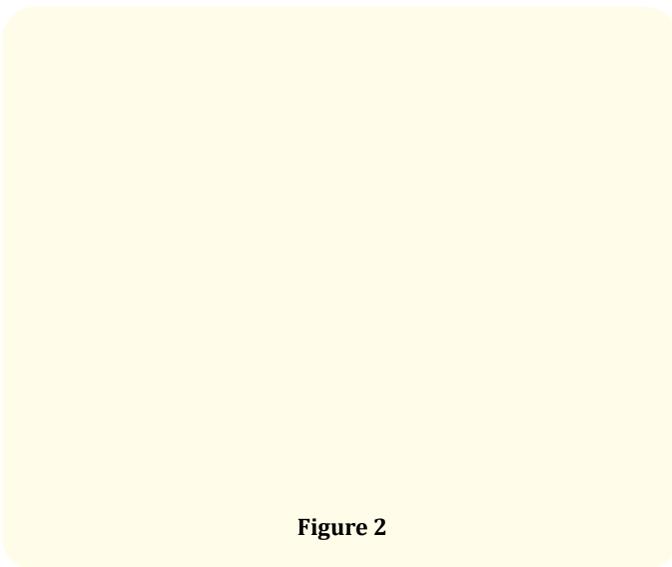


Figure 2

Discussion

The use of constrained hinge implants in TKA should be reserved for

- Severe ligamentous laxity with large extension gaps or flexion;
- Large bone destruction in tibial plateau or femoral condyles, with loss of collateral or ACL/PCL ligaments;
- Total rupture of one of the collateral ligaments.

However, this type of implant was a good option in upper written indications. The hinge knee prosthesis is used because it decreases the stress on the fixation and allows a more physiological movement of the knee.

Survivorship in a recent review of the literature was in the range of 51% to 92.5% at ten years post-operatively. Most ordinary complications rates are in the range of 9.2% to 63%, with infection and aseptic loosening. Hinge knee prostheses are used in severe knee instability, aseptic loosening, bone loss. They have good survivorship and outcome, but still have high complication and revision conditions. The implant is a good alternative when used properly for patients who are not candidates for less constrained implants [1-9].

Conclusion

Benefits of Rotating Hinged knee prosthesis was good pain relief, functional recovery and knee stability both in complex primary and in revision cases.

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Volume 4 Issue 8 August 2021

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