

Spherical Periacetabular Osteotomy Using a Para-Sartorial Approach: A Muscle-Sparing Procedure for Patients With Acetabular Dysplasia

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A spherical periacetabular osteotomy (SPO) is a novel periacetabular osteotomy for patients with acetabular dysplasia that was first reported in 2021. This minimally invasive osteotomy involves the use of an anterior approach with a 7-cm skin incision around the anterior superior iliac spine. Preoperative planning, based on CT scans, involves the use of a three-dimensional templating system for total hip arthroplasty to determine the chisel radius, height, and depth of the osteotomy for each patient.

One of the most important features of this osteotomy is the cut into the tear drop area under fluoroscopic guidance. This procedure differs from a conventional periacetabular osteotomy in two ways: grooving is performed to dig the cortical bone to perform the osteotomy in front of the arcuate line, and hollowing out the circumference of the hip joint is performed. A SPO preserves the quadrilateral surface, and the resultant stability of the pelvic ring is associated with quick postoperative recovery and few problems with nonunion.

Preoperative planning enables high reproducibility because numerous measurements and values are discussed and decided in advance, providing the surgeon with a clearly defined roadmap intraoperatively and under fluoroscopic guidance. A SPO is indicated if the lateral center-edge angle is -10° to 20° and the acetabular roof obliquity is 40° or less, if the Tönnis classification is grade 0 to grade II, and if patients with a Tönnis grade of 0 are no older than 60 years and patients with a Tönnis grade of I or II are no older than 50 years.

In the conventional method, the tensor fascia latae muscle is detached from the iliac crest approximately 5 cm from the anterior superior iliac spine, and the iliac crest is cut at a height of 2 cm to reach the arcuate line. This approach does not completely preserve muscles, and particular attention is not paid to the lateral femoral cutaneous nerve, resulting in temporary lateral femoral cutaneous nerve dysfunction in approximately 90% of patients postoperatively.

This video introduces a SPO via the para-sartorial approach, which is a modified approach for a curved periacetabular osteotomy. After the fascia of the sartorius muscle is incised, the muscle belly is retracted laterally to reach the arcuate line between the sartorius and the iliacus muscles. This is a muscle-sparing approach without the need for an osteotomy of the iliac crest; however, the surgeon must identify and protect the lateral femoral cutaneous nerve, which usually is located under the sartorius fascia. This video shows the para-sartorial approach for a SPO and reviews short-term results of this procedure.