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CORR Insights®: Does Salter Innominate Osteotomy Predispose the Patient to Acetabular Retroversion in Adulthood?

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Where Are We Now?

The current study by Kobayashi et al. is interesting for pediatric orthopaedic surgeons who perform Salter osteotomy as an additional early step in preventing insufficient coverage after either

closed or open reduction of developmental dysplasia of the hip.

To date, there is no consensus in determining whether Salter osteotomy may cause acetabular retroversion in the long-term. Two previous studies [1, 5], as well as the current study, reported no differences of acetabular orientation between the hips operated on by Salter osteotomy and the contralateral “normal” hips. Another study [2] examining 85 Salter innominate osteotomies did report 24% of acetabular retroversion, although its control group was unclear.

The current study is limited by the method in which the researchers examined acetabular retroversion. Crossover sign and prominence of the ischial spine are both strongly influenced by pelvic tilt at the time of radiographic assessment [4, 6, 8, 9].

Where Do We Need To Go?

The current article leaves us with unanswered questions: (1) If the pelvis was in a correct neutral position, what was the amount of acetabular retroversion in the hips that had a positive crossover sign and a prominence of the ischial spine? (2) How can we be sure that pelvic tilt has not influenced the appearance of both crossover sign and prominence of ischial spine in the examined patients? (3) Since both groups of patients with and without radiographic signs of acetabular retroversion were equally clinically symptomatic, could retroversion assessed by radiographic signs trigger osteoarthritis? (4) All of the patients were younger than 30 years of age at followup, and only 5% had radiographic signs of osteoarthritis. What will happen with a longer followup?

In their long-term followup study [7], Thomas and colleagues reported a 57% incidence of advanced osteoarthritis for patients with an average age of 45 who already had total hip replacement. This percentage cannot be explained by acetabular

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retroversion alone since previously reported studies reported the incidence of osteoarthritis at approximately 20%–25%. It is possible that other factors like hip joint cartilage failure due to developmental dysplasia of the hip contributed to the high rate of joint cartilage degeneration. However, the authors did not investigate the acetabular orientation in their series. Therefore, we do not know whether the incidence of osteoarthritis present in almost 57% of the hips operated on by Salter osteotomy was the consequence of acetabular retroversion or hip joint cartilage failure due to developmental dysplasia of the hip.

How Do We Get There?

Future long-term followup studies for patients treated by Salter osteotomy that incorporate more advanced imaging techniques than those used by Kobayashi and colleagues may help us answer the questions above.

We hope that future long-term followup studies of patients with developmental dysplasia of the hip who had Salter osteotomy may further highlight the “grey zones” found in current papers with advanced imaging techniques like CT-scan [3, 8]. This would be ideal for future studies examining acetabular version after Salter osteotomy.

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