50 Years Ago in CORR

The Value of the Resection of the Femoral Head in the Repair of the Hip Joint

Arnold Soren MD, PhD CORR 1960;18:221–230

Resection arthroplasty is one of the oldest currently used orthopaedic procedures, first reported by John Rhea Barton in 1827 [1, 2]. While largely considered a salvage procedure today, it was considered a reconstructive procedure until the advent of the total joint arthroplasty. Many improperly refer to this operation as a “Girdlestone procedure” or “Girdlestone resection,” based on the techniques described by Gathorne R. Girdlestone, who in the first half of the 20th Century described several variations for treating pyogenic [5, 6] or tuberculous [4] infections. (The terms “Girdlestone procedure” or “Girdlestone resection” are, however, inappropriate for modern operations, since the rather more radical operations proposed by Girdlestone hardly resemble the relatively conservative débridements typically performed today [6].) Soren, in 1960 [8], provided an excellent update on the status of resection arthroplasty, largely based on a series of 71 hips treated at the

Table 1 Analysis of end-result

Pain	Mobility						
	Flexion	Abduction	Inward and outward rotation	Stability	Walking capability	Working ability	Leg shortening
Excellent							
Absent or occasional	90°	30–40°	20°	Trendelenburg sign slightly apparent	Many hours with or without a cane	Unrestricted work in former profession and household	Shortening up to 2 cm
Good							
After intensive use of the hip joint. (Alleviated by heat)	45–60°	25–35°	20° 35°	Trendelenburg sign positive	Several hours with a cane	Semiambulatory; professional work and household duties for several hours	Shortening 2–3 cm
Satisfactory							
After short use of the hip joint. (Alleviated by bed rest or physiotherapy)	45°	20–30°	20° 30°	Trendelenburg sign positive, limping or waddling gait	Short errand with a cane, longer distances at intervals and with 2 canes	Cannot work; can carry on at home	Shortening 2–3 cm
Poor							
At bed rest (Constant use of analgesics)	20°	20°	0° 5°	Persistent obliquity of the pelvis	Mainly in house with 2 canes or crutches	Cannot carry on at home	Shortening up to 5 cm
Mild contracture							
Considerable contracture							

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Orthopaedic Clinic of Munich between 1946 and 1954. Soren also developed an evaluation tool using pain, mobility,

stability, and walking capacity as criteria (Table 1). As was common at the time, he used categorical ratings:

excellent, good, satisfactory, and poor. Each of these four categories required specific levels of function within the

Table 2 Evaluation of end-results

Diseases of the hip	Number of hip joints operated upon	Result			
		Excellent	Good	Satisfactory	Poor
Primary or secondary osteoarthritis of the hip joint	10	1	3	5	1
Osteoarthritis following reduced congenital dislocation of the hip joint	21	4	7	6	4
Unreduced or recurrent congenital dislocation of the hip joint	25	5	13	6	1
Ankylosis of the hip joint	6	2	3		1
Miscellaneous (including acetabular dysplasia and coxa valga, acetabular protrusion and posttraumatic necrosis of femoral head)	9	2	4	2	1
Total	71	14	30	19	8

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Fig. 6 (Left) Schema with residual femoral neck. (P) Pivot for axes of all hip motions. (PH) Torque of the body weight. (OI) Origin and insertion of glutei. (LP) Lever of the hip joint. (Right) Schema with neck. (P₁) Axis for abduction. (P₂) Axis for adduction. (L₁P₁) Lever of abduction. (L₂P₂) Lever of adductor muscles counteracting abduction. (Reprinted with permission and ©Lippincott Williams and Wilkins, from Soren A. The value of the resection of the femoral head in the repair of the hip joint. *Clin Orthop Relat Res.* 1960;18:221–229.)

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four criteria. (Merle D'Aubigné developed a similar type of scheme some years earlier [7].) One of the problems with such schemes was that some patients would not neatly fit into the specific ratings because they would satisfy certain aspects of the criteria, but not others [3].

Difficulties in rating aside, with a followup ranging from 3 to 9 years, Soren reported 14 of the 71 patients had an excellent result, 30 good, 19 satisfactory, and eight poor (Table 2). These were likely remarkable findings given the wide range of indications, but he noted, "...cases of osteoarthritis often were disappointing. It may be that in cases of osteoarthritis the gluteal musculature is relatively elongated secondary to operation and made thereby less efficient. This is not the case in congenital hip dislocation, where the same muscles have adapted themselves over the years to their shortened stretch." He surprisingly concluded, "Despite the shortcomings of this procedure, end-results are better than in the cup or replacement arthroplasty."

It is useful to remind ourselves of how far we have advanced in treating hip problems. Total hip arthroplasty, always more predictable in relieving pain and restoring function than resection arthroplasty and remarkably durable even with early techniques and implants, has evolved into one of the most successful surgical procedures of all times, even with a wide variety of implant designs.

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