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EXPERIENCE WITH 79 SUBTROCHANTERIC VALGUS OSTEOTOMIES OF THE HIP

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Von Baeyer (1918) and Lorenz (1919) independently introduced the subtrochanteric wedge osteotomy in the treatment of unstable hips, especially in the treatment of congenital dislocations and pseudarthrosis following fractures of the femoral neck. At a later time (1925) Lorenz used the same operation in the treatment of osteoarthritis involving the hip joint.

McMurray (1935) recommended a modified Lorenz procedure by which the line of weight-bearing might be altered in cases of osteoarthritis of the hip, viz. an intertrochanteric displacement osteotomy.

Pauwels (1935) used an abduction type of subtrochanteric osteotomy by which a shearing stress might be converted into a compression force.

The blade-plate internal fixation procedure to be used in cases of high femoral osteotomies (Blount (1943)) meant the introduction of a method by which the hip might be stabilized after surgery.

Many variations of high femoral osteotomy have been described, but the intertrochanteric type with or without displacement, with or without varus or valgus angulation, has in recent years become the most popular procedure. A fairly high percentage of non-union, ranging between 3 and 28, is a common feature (Rosborough & Stiles 1967, Scott 1967, Jerre & Tilling 1969).

Müller et al. (1970) and Holst-Nielsen et al. (1972) recommended a compression type of fixation, using either the ASIF compression plate or a McLaughlin apparatus by which hazards of non-union might be escaped.

The object of the present paper is to publish our experience in 79 subtrochanteric valgus osteotomies, performed on 79 patients suffering from sequels of fracture of the neck of the femur (10 per cent of the total number of patients admitted on this account).

MATERIAL AND METHODS

During the period from 1961 to 1971, subtrochanteric valgus osteotomy was performed on 79 patients. Seventy-five per cent of the patients were 60 years of age or more, 50 per cent being above 70. Eighty per cent were females. The primary treatment of the patients is outlined in Table 1. Complications indicating osteotomy are listed in Table 2. The interval of time between onset of fracture and performance of osteotomy varied and covered from one month up to several years, covering less than six months in 70 per cent of the cases.

Table 1. Primary treatment of 79 cases of fracture of the neck of the femur, who had subtrochanteric valgus-osteotomy performed.

Osteosynthesis a.m. Küntscher-Johansson	57
Disa nail	1
2 nails	1
Screw-plate	1
Conservatively	12
McLaughlin or Jewett	6
	78
Primary osteotomy	1
	79

Table 2. Indication for subtrochanteric valgus-osteotomy in 79 cases of fracture of the neck of the femur.

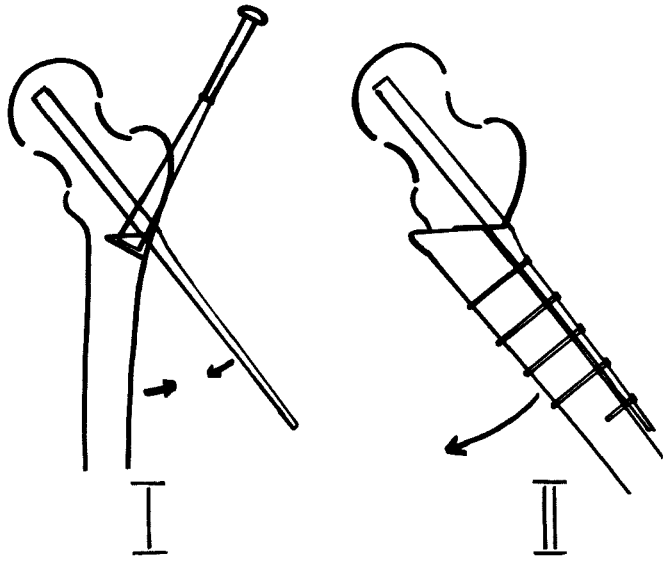
Secondary fracture dislocation	26	
Pseudarthrosis	5	36
Retarded union	16	
Nail dislocated	15	
Necrosis of the head of the femur	12	
Penetration of head by nail	1	
Primary wrong placing of nail	1	
Refracture during training	2	
Primary osteotomy (Pauwels III→I)	1	
	79	

By lateral approach, subtrochanteric wedge osteotomy was performed as shown in Figure 1: I–II. The main idea was to imitate a fracture in the region, realizing that this type of fracture has a marked tendency to primary healing. The method was published by Movin on the occasion of the 495th meeting of the Danish Society of Surgeons in 1968.

Throughout the first few years, a Neufeld plate was used for fixation, but later it was replaced by a 160° Jewett nail. The patients were confined to bed for two weeks after the operation, after which they were allowed to sit in a chair for another two weeks. The patients had to walk in a Thomas caliper for 2–3 months before weight-bearing was allowed.

In recent years there has been a tendency to allow weight-bearing at earlier stages.

Figure 1: Subtrochanteric valgus-osteotomy; surgical procedure.



I. a) A 180° or 160° nail + plate are inserted.
b) A wedge is sawed out from the anterior cortex.
c) The rear cortex is fractured by an osteotome.

II. The medial cortex is fractured, the femoral shaft and the plate being collected by holding forceps; the leg is abducted at the same time.
It appears from the drawing that a combination of valgus osteotomy and displacement osteotomy is obtained by this procedure.
The result of a lower osteotomy is a valgus position.

RESULTS

Clinical as well as radiological follow-up was accomplished in 63 out of the 79 cases. Twelve patients died before the time of follow-up; two did not want to participate, and one could not be traced. One patient was excluded because of a fresh fracture of the tibial condyles at the time of follow-up.

The postoperative period of observation ranged between one and ten years, averaging 3.7 years. The distribution of the patients during the years is shown in Table 3.

The clinical condition of the patients was evaluated and points were given according to the standard introduced by Merle D'Aubigné, as suggested by Movin (1957).

Table 3. Postoperative time of observation in 63 patients who had subtrochanteric valgus osteotomy performed.

Time of observation	No. of patients
10 years	2
9 „	4
8 „	0
7 „	2
6 „	4
5 „	4
4 „	10
3 „	15
2 „	13
1 „	9
	63 patients

Table 4. Clinical evaluation after Merle D'Aubigné of 63 subtrochanteric valgus osteotomies following fracture of the neck of the femur.

		Pains		Joint Mobility		Walking capacity	
Not satisfactory	0					1	
	1			4		9	
	2	1	1	14	18	10	20
Satisfactory	3	7		16		9	
	4	18	25	6	22	14	23
Good	5	21		6		14	
	6	16	37	17	23	6	20
		63	63	63	63	63	63

An outline of this clinical evaluation is given in Table 4, from which it appears that the effect of the procedure on the patients' pains was satisfactory, but the mobility of the joint and the walking capacity was not influenced accordingly.

X-ray pictures were taken in all cases in the antero-posterior and lateral plane. Healing after osteotomy was obtained in all cases.

(We have done subtrochanteric osteotomy in an additional group of 23 patients with osteoarthritis of the hip and all of them also healed.)

Primary union failed to occur in one case: The screws of the plate broke; the osteosynthesis was repeated upon which union occurred. Broken screws were experienced in yet another case, but even so, the osteotomy healed without requiring intervention.

Threatening or manifest pseudarthrosis at the site of fracture of the neck of the femur was demonstrable in 51 patients among the 63 examined. Union of the fracture after osteotomy occurred in 33 cases (65 per cent). Necrosis of the head of the femur was seen in 30 of the 63 cases (48 per cent).

The rate of mortality was 1.3 per cent.

The incidence of infection at deep sites was high (6 per cent) in the present series and required removal of the osteosynthetic material in all five cases. Healing occurred after osteotomy in spite of the infection but the result was considerably deteriorated.

In consequence of this complication our operating room conditions have been revised. Nothing but clean procedures are allowed in the operating theatre in which the osteotomies are performed.

CONCLUSION

The subtrochanteric valgus osteotomy is found to be a valuable measure in the treatment of sequels of fracture of the neck of the femur. The effect of the procedure on the pain is especially beneficial. The rate of occurrence of primary union obtained by the procedure is remarkable. The operation should never be performed in operating theatres in which abdominal or urological surgery is otherwise performed.

SUMMARY

During the period 1961–1971 subtrochanteric valgus osteotomy was performed in 79 patients suffering from sequels of fracture of the neck of the femur. Sixty-three patients underwent postoperatively a clinical and radiological follow-up. All osteotomies healed. In one case reoperation was necessary to achieve union.

The procedure had a satisfactory effect on the pains of the patients, but mobility of the joint and walking capacity was not influenced accordingly. The incidence of deep infection in the series was high (6 per cent). In consequence of this complication our operating theatre conditions have been revised.

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