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BURSITIS RETROCALCANEARIS

By

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Tender thickening at the back of the heel not infrequently leads the patient to the doctor. It is those especially in the younger age group and most often women who have this complaint. The disease is generally registered as calcaneus exostosis, but ought indeed to be called bursitis retrocalcanearis, since no osseous exostosis formation can ever be demonstrated, only an often tender thickening of the soft tissue, most pronounced just laterally of the attachment of the achilles tendon. The condition is due to a state of irritation in the bursa which lies between the uppermost, furthest posterior corner of the calcaneus and the achilles tendon.

Various explanations have been given why this disease arises. Thus *Haglund* (1928) declares that the disease occurs in those in whom the uppermost posterior corner of the calcaneus forms a particularly sharp and prominent angle. This combines with a shoe whose heel piece is rigid, with a sharp transverse upper edge, so that an incongruency arises between shoe and heel; thus the achilles tendon is pinched between the heel piece and the prominent corner of the calcaneus.

Fowler and *Philip* (1945) also think that it is the shape of the calcaneus itself which determines the condition. They give an account of the attachment of the achilles tendon in which one can distinguish a central part attached to the mid-area of the posterior aspect of the calcaneus, while the lateral parts of the tendon proceed to the medial and lateral surfaces of the calcaneus. The section of the bursa which lies between the achilles tendon and the posterior aspect of the calcaneus is small, while the main part of the bursa lies cranially of this, surrounded by fat tissue. Fowler and Philip measure the angle between the most posterior and the lowest surface of the calcaneus and in their opinion it is typical that this latter is larger than 75 degrees in these

patients. The angle is measured by general X-ray pictures in a lateral projection; for comparison they measured the same angle in 45 normal persons and here they found the angle between 44 and 69 degrees.

Ferguson and *Gingrich* (1957) quote as a method of measuring the relative prominence of the posterosuperior corner the determination of the relationship $q = \frac{a}{b}$. *a* is the length of a line drawn from the posterior corner of the articular surface towards the talus and the posteroinferior corner, and *b* is the length of a line at right angles to *a*, directed towards the posterosuperior prominent part of the calcaneus (see fig. 1).

In order to evaluate the results of conservative and operative treatment we undertook a follow-up investigation into a number of patients who were registered in the Orthopaedic Hospital under the diagnosis of: "exostosis calcanei". At the same time we verified these measurements.

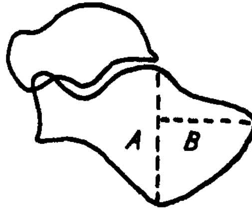

Fig. 1.
Determination of the relative prominence of the posterosuperior corner of the calcaneus expressed by a quotient: $q = \frac{A}{B}$

THE SERIES

This comprises a follow-up into patients conservatively treated in 1953 and 1954 and those surgically treated in 1953, 1954 and 1955.

50 patients were *conservatively* treated and 29 were contacted, 18 personally and 11 in writing.

In all 53 patients were *surgically* treated, 32 were contacted, 27 personally while 5 replied in writing.

AGE AND SEX DISTRIBUTION

The average age of those conservatively treated was 17.3, while for those surgically treated it was 16.1 years. (The youngest conservatively treated was 3 years old, the oldest 49 years. The youngest surgically treated was 11 years, the oldest 35 years).

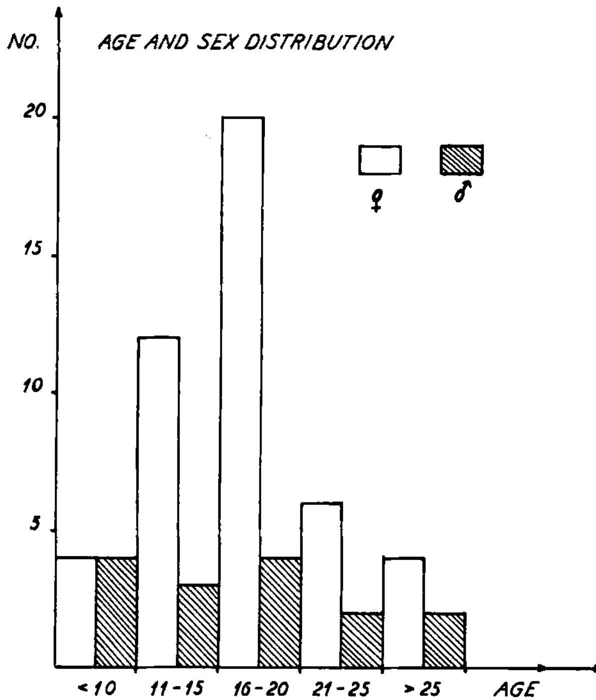

Fig. 2.

Sex distribution

Conservatively treated	men: 11	women: 18
Surgically treated	men: 4	women: 28

Thus, the disease causes operative treatment to be given most frequently amongst women. Even if it does not clearly appear from the records according to which criteria the patients were selected for operation, the impression is given, however, that it was especially those cases with pronounced subjective and objective symptoms which were operated on. In this connexion it may be mentioned that 11 of those 32 operated on were previously treated conservatively.

The age and sex distribution for the whole series is shown in fig. 2.

TYPE OF FOOT

A slightly hollow longitudinal arch is found in the majority, while we have not been able to establish any varus position of the heel parts (fig. 3).

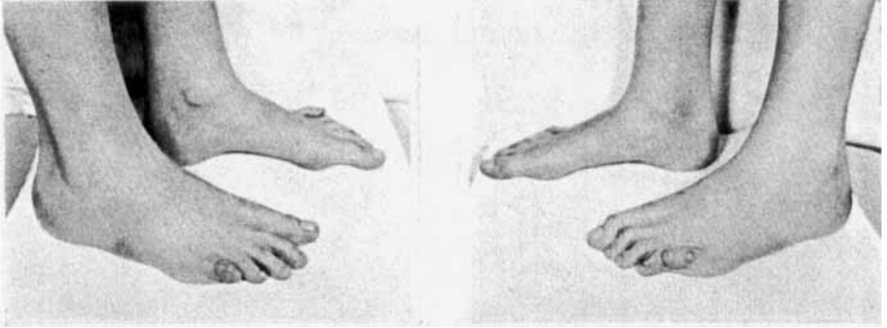

Fig. 3.
This picture shows the type of foot we usually found. The hollow longitudinal arch seems typical to us.

Amongst those operated on cavus was found in 20, i.e., 63 %, 2 were classified as valgus and 8 was normal. Amongst those conservatively treated cavus was found in 15 patients, i.e. 52 %, planovalgus in 6, normal in 6. (The type of foot was not stated for 2 conservatively treated and 2 surgically treated).

35 of the total number of patients thus had cavus feet, i.e. 57 %.

X-RAY EXAMINATION

According to *Fowler* and *Philip*'s principles we have measured the angle between the lowest and most posterior calcaneus surfaces by X-ray in 29 patients. In 4 patients (representing 6 heels) an angle greater than 75 degrees was found, while 25 patients (representing 44 heels) showed a calcaneus angle less than or equal to 75 degrees.

Moreover, we have measured *Ferguson*'s quotient q in 31 patients representing 55 heels. 40 of these were found with $q > 0.60$ and 15 with $q < 0.60$.

The conservative treatment consisted of felt pads in the heelpiece, or possibly of heelless shoes.

The surgical treatment consisted of *either* simple chiselling of the prominent uppermost, posterior corner of the calcaneus *or* wedge resection preserving the most posterior surface of the calcaneus.

One patient was treated by exstirpation of the bursa.

Results: from Table 1:

Conservatively treated: 52 heels

Completely recovered	improved	unchanged
22	19	11
(42.3 %)	(36.5 %)	(21.2 %)

Surgically treated: 53 heels

	Completely recovered	improved	unchanged
Exostosis chiselling	22	12	4
Wedge resection	5	2	7
Bursa exstirpation			1
	27	14	12
	(51 %)	(26.5 %)	(22 %)

DISCUSSION

In all there were 61 patients who 3–6 years ago had visited the Orthopaedic Hospital and were registered with the diagnosis of exostosis calcanei. The patients had in common a tender thickening at the uppermost, furthest posterior corner of the calcaneus, while there were no characteristic X-ray findings. At operation a bursitis was found partly below the Achilles tendon and partly subcutaneously.

In both surgical and conservative treatment the aim was to relieve the pressure on the bursa.

As a link in *the conservative treatment* it is our impression that the height of the heel has a part to play and that the so-called officer type of heel is best suited for weight-relieving (the calcaneus will be less rigid and the foot will slide forward in the shoe).

The surgical methods have been discussed by various authors.

Haglund (1928) recommended simple chiselling of the most prominent part of the uppermost, furthest posterior corner of the calcaneus, while *Zadek* (1939) and, independently of him, *Thomsen* (1941) used a wedge resection with a cranial base, in order to preserve the most posterior surface intact. As a disadvantage of wedge resection it should be mentioned that the wedge must include the whole height of the bone if one wishes to avoid extra fracture lines in closing the wedge; neither *Zadek* nor *Thomsen* attempt this, but undertake only a partial resection through the vertical diameter of the bone. Impeding callus along the

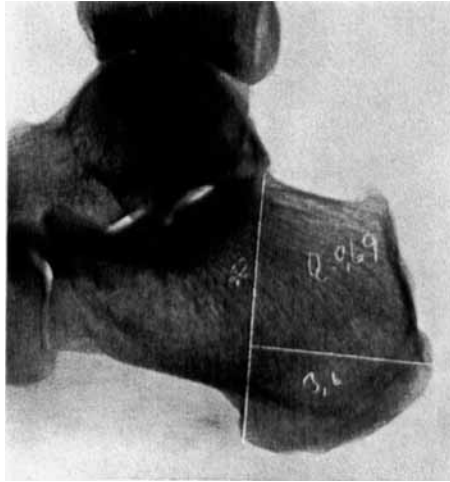

Fig. 4.

wedge and the fracture line emerging may compromise the result and this happened in 4 cases amongst 14 heels treated with wedge resection. The treatment requires furthermore 3–6 weeks plaster bandage. *Zadek* has recourse to the method in 3 cases (adult patients) and is satisfied with the method although he does not, however, state results over a long period. *Thomsen* warns against the method after employing it in one case. *Breitenfelder* (1955) has used the method for children in 9 cases since he believes that chiselling is insufficient, showing a tendency to recurrence. No follow-up investigation exists, however, for these 9 children. *Neumeyer* (1957) doubts that this method will ensure freedom from recurrence, since the apophysis is preserved and he thinks that this is what determines the prominence of the bone.

In our series wedge resection was used exclusively for adults. As can be seen in the tabulated results, half of the 14 wedge-operated heels were unchanged, and impeding callus was demonstrated by X-ray to be the cause of 4 of these heels.

In the simple "exostosis" chiselling the most prominent part, i.e., the topmost, furthest posterior corner of the calcaneus was chiselled away. After studying the X-ray pictures taken in this follow-up investigation into 33 heels, it is our impression that the best results are obtained where a large smooth chiselling-away is undertaken (see fig. 4); 7 patients had therefore to be reoperated on, owing to insufficient chiselling at the first operation.

On studying the X-ray pictures considerable variation was found in the shape of the calcaneus and we did not succeed in discovering an agreement with the angle stated by *Fowler* and *Philip* and only partial agreement with *Ferguson* and *Gingrich*'s quotient. For purposes of comparison we examined X-rays of feet belonging to 10 normal people and found the same wide variation in calcaneus shape as in the series: more of these had *Fowler*'s angle or *Ferguson*'s "q" greater than the normal values stated by them.

Classification of the treatment results shows 3/4 healed and improved in both the conservatively treated and in the operated group. As pointed out earlier women in the 16–18 age group form the main section, while men are more evenly distributed from the age point of view.

No simple explanation of this can be given. The fact that men continue to wear the same type of footwear as used in their boyhood years, while women—depending on the latest fashion—try new models, perhaps this fact plays a part. In the case of both sexes the transition from school to work takes place at the same time and brings with it greater demands of weight upon the feet.

Since the results obtained in the conservatively treated and surgically treated groups are quite uniform and the disease presumably has a tendency towards spontaneous healing (comp. its frequent occurrence in teen-agers), it seems reasonable to adopt conservative treatment at first, at least in all the less serious cases, while reserving operation for those cases in which the symptoms persist or are especially troublesome and then to adopt abundant and smooth chiselling of the furthest superior corner of the calcaneus.

SUMMARY

A follow-up investigation into 61 patients with bursitis retrocalcanearis was undertaken. The observation period was 3–5 years. The series consists of 46 women and 15 men. The average age for the conservatively treated was 17.3 years, for the surgically treated 16.1 years. 57 % of the patients had a slightly hollow longitudinal arch without demonstrable causative varus position of the heel.

3/4 of both the conservatively treated and the surgically treated healed or improved.

In the case of patients, therefore, under 20 years of age with this disease, our advice is always to employ conservative treatment first in the form of suitably adjusted footwear, possibly supplemented with a

felt pad in the heel piece or with a wedge under the heel. If satisfactory results are not achieved after a fairly long observation period, surgical treatment is advised with large, smooth chiselling of the furthest superior corner of the calcaneus, while wedge resection is not recommended.

RESUME

Il a été procédé à un examen complémentaire de 61 malades souffrant de bursite rétrocalcanéenne. La période de l'observation a été de 3 à 5 ans. Parmi ce matériel d'observation, il y avait 46 femmes et 15 hommes. L'âge moyen des malades soumis au traitement conservateur a été de 17,3 ans, de ceux traités opératoirement 16,1 ans. 57 % des malades présentaient une courbure longitudinale légèrement excavée sans position varus apparente du talon.

On a trouvé parmi l'ensemble des malades, qu'ils aient été soumis au traitement conservateur ou opératoire que ¾ d'entre eux étaient guéris ou améliorés. C'est pourquoi, il est conseillé de toujours avoir recours au traitement conservateur chez les malades souffrant de cette affection qui sont âgés de moins de 20 ans, en premier lieu sous forme de chaussures appropriées, éventuellement avec une couche de feutre dans le contrefort ou un tampon en forme de coin sous le talon. Si des résultats satisfaisants ne sont pas obtenus après une période d'observation prolongée, on recommande le traitement opératoire avec une forte résection lisse de l'angle supérieur arrière du calcaneum, alors qu'une résection en coin est déconseillée.

ZUSAMMENFASSUNG

Es wurde ein Nachuntersuchung an 61 Patienten mit Bursitis retrocalcaneavis vorgenommen. Die Beobachtungszeit war 3–5 Jahre. Das Material besteht aus 46 weiblichen und 15 männlichen Patienten. Das Durchschnittsalter für konservativ behandelte war 17,3 Jahre, für operativ behandelte 16,1 Jahre. 57 % der Patienten hatten eine leichte Hohlfusstype ohne nachweisbar begleitende Varusstellung der Ferse.

Sowohl die konservativ als auch die operativ behandelten Fälle waren zu ¾ geheilt oder gebessert.

Man empfiehlt daher bei Patienten mit diesem Leiden im Alter unter 20 Jahren immer zuerst eine konservative Behandlung in Form von zweckmässiger Beschuhung, eventuell ergänzt mit Filzablastung im Fersenteil des Schuhes oder einem Keil unter der Ferse, anzuwenden.

Wenn man nach lengerer Beobachtungszeit kein zufriedenstellendes Ergebnis erreicht, wird die operative Behandlung mittels grosser, glatter Abmeisslung der hintersten Kante des Calcaneus emphohlen. Von der Keilresektion wird abgeraten.

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