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RUPTURED ACHILLES TENDONS TREATED SURGICALLY UNDER LOCAL ANAESTHESIA

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Twenty-two patients with rupture of the Achilles tendon were successfully treated by simple end-to-end suture under local anaesthesia. The results are discussed in the light of previous literature on surgical versus conservative treatment and the advantages of surgery under local anaesthesia are pointed out.

Key words: Achilles tendon; athletic injuries; local anaesthesia; rupture; tendon injuries

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Rupture of the tendo calcanei achillis occurs quite often. The rupture is more often unilateral and is most frequently seen in middle-aged sportsmen (Barfred 1973).

During the past 40 years the treatment of choice has been operative reconstruction. However, to avoid delayed healing, necrosis of the skin, adhesions and anaesthetic complications, conservative treatment has been recommended by several authors (Gillies & Chalmers 1970, Lea & Smith 1972). The increased rate of re-rupture and healing with residual elongation of the tendon following conservative therapy has been stressed in several publications (Jacobs et al. 1978, Nistor 1976). Therefore operative treatment is still considered superior to conservative treatment. Simple end-to-end suturing has proved to be as successful as other operative reconstructions (Arndt 1976, Brade 1977, Heim & Heim 1977, Jessing & Hansen 1975).

To avoid anaesthesiological problems (including that of acquiring acute anaesthetic assistance) the operative treatment of ruptured Achilles tendons has been performed under local anaesthesia at the Orthopaedic Surgery Hospital in the city of Sorø.

MATERIAL

Twenty-two patients with subcutaneous rupture of the Achilles tendon were operated on under local anaesthesia. There were 20 men and 2 women, aged 20 to 52 years, with an average age of 34 years.

The rupture was diagnosed by the usual clinical examination. All had swelling, tenderness and a palpable defect at the site of the rupture. All reacted positively to the Thompson test, and none of the patients were able to stand on their toes.

METHOD AND RESULTS

All patients were operated on within 4 days from the time of the rupture. The operation was performed under local anaesthesia with Carbocain® 1 per cent with adrenaline. The amount used varied from 5 to 15 ml, averaging 10 ml. Tourniquet was not used. The operation was performed through a 4 to 9 cm long longitudinal incision over the rupture. Peroperatively the site of rupture was diagnosed to be 2 to 7 cm proximal to the insertion with a diastasis from 0 to 6 cm. The ends of all tendons were frayed.

All ruptures were repaired *ad modum* Bunnell with silk No. 1. The operation was performed by

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the usual staff of surgeons with varying experience. One nurse assisted the surgeon while another nurse talked to the patient. During the operation the patient was placed in a prone position.

The operative procedure was not complicated by the type of anaesthesia, and there were no difficulties in adapting the ends of the tendon. No notable bleeding occurred during the operation. Preoperative routine laboratory samples were omitted.

Twenty patients felt no pain and were comfortable during the operation; 2 experienced slight pain when pulling the tendon, but did not require further analgesia.

Postoperatively the treatment consisted of 6 weeks in a below-knee plaster with the ankle in moderate plantar flexion, followed by 14 days of active exercises before walking was allowed.

All patients were examined 4 months after the operation. No cases of skin necrosis, wound infection, delayed wound healing or disturbances of sensibility were observed. Re-rupture occurred in one patient after 3½ months.

In an objective evaluation of the relative plantar flexion power (Jacobs et al. 1978) a mean of 90 (85–96) per cent was regained. Normal plantar flexion was noted in all patients, slightly decreased dorsiflexion was observed in 4 patients, and minor fixation of the scar was found in 4 patients. In all the patients the gait was close to normal.

All patients were asked if they would prefer local anaesthesia to general anaesthesia. All answers were positive.

DISCUSSION

The treatment of the ruptured Achilles tendon aims to re-establish the anatomical continuity in order to regain normal plantar flexion power and normal ankle mobility.

When comparing surgical and conservative treatment several authors have used plantar flexion power as the measure of the efficiency of the treatment. In these materials the relative plantar flexion power was 62 to 90 per cent after conservative treatment, and 75 to 95 per cent after surgical treatment (Borgi et al. 1978, Inglis et al. 1976, Jacobs et al. 1978, Lagergren & Lindholm 1959, Lea & Smith 1972, Nistor 1976). Plantar flexion power can vary depending on the method of measurement used, the time of measuring and on the definitional presumptions (Gillies & Chalmers 1970, Jacobs et al. 1978).

The frequency of re-ruptures following conservative treatment is 10 to 25 per cent compared with less than 6 per cent following surgical repair (Gillies & Chalmers 1970, Inglis et al. 1976, Jessing & Hansen 1975, Lea & Smith 1972, Nistor 1976). Our results are in accordance with these.

The use of local anaesthesia is simple, economical and requires only a minimum of equipment. Compared with general anaesthesia less preoperative preparations are needed. Problems in obtaining acute anaesthesiological assistance are avoided and an obvious rationalisation of the staff needed for turning the patient and similar procedures is achieved. The patient is exposed to less strain by avoiding premedication, intubation and potential anaesthesiological complications, and less postoperative observation is required. Additionally it is a simple way of solving the problems concerning operative contraindications. The dose of local anaesthetic in our experience has been sufficient. Complete analgesia is achieved if the operation is performed in plantar flexion avoiding direct pulling of the tendon.

Thus, rupture of the Achilles tendon can be adequately treated by operation under local anaesthesia. Not only is it more economical but it minimizes the number of staff required and is more satisfactory for the patient.

REFERENCES

Arndt, K. H. (1976) Achilles tendon rupture and sport. *Zentralbl. Chir.* **101**, 360–364.

Barfred, T. (1973) Achilles tendon rupture. *Acta Orthop. Scand.*, Suppl. 152.

Borgi, R., Oberlin, P. & Faure, C. (1978) La rupture du tendon d'Achille, traitement orthopedique ou traitement chirurgical? *Acta Orthop. Belg.* **44**, 560–566.

Brade, A. (1977) Verletzungen der Achillessehne und operative therapie: Plantarisdurchflechtung oder adaptationsnaht. *Unfallheilkunde* **80**, 73–76.

Gillies, H. & Chalmers, J. J. (1970) The management of fresh ruptures of the tendo achillis. *J. Bone Joint Surg.* **52**-A, 337–343.

Heim, U. & Heim, C. (1977) Die subkutane Achillessehneruptur. *Helv. Chir. Acta* **44**, 581–590.

Inglis, A. E., Scott, W. N., Sculco, T. P. & Patterson, A. H. (1976) Ruptures of the tendo achillis. *J. Bone Joint Surg.* **58**-A, 990.

Jacobs, D., Martens, M., Van Audekercke, R., Mulier, J. C. & Mulier, F. R. (1978) Comparison of conservative and operative treatment of Achilles tendon rupture. *Am. J. Sports Med.* **6**, 107–111.

Jessing, P. & Hansen, I. (1975) Surgical treatment of 102 tendo achillis ruptures – suture or tenontoplasty? *Acta Chir. Scand.* **141**, 370–377.

Lagergren, C. & Lindholm, Å. (1959) Vascular distribution in the Achilles tendon. *Acta Chir. Scand.* **116**, 491–495.

Lea, R. B. & Smith, L. J. (1972) Non-surgical treatment of tendo achillis rupture. *J. Bone Joint Surg.* **54**-A, 1389–1507.

Nistor, L. (1976) Conservative treatment of fresh subcutaneous rupture of the Achilles tendon. *Acta Orthop. Scand.* **47**, 459–462.

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