Tetrapartition of the Achilles Tendon After Extensive Muscular Resection in a Lower Leg Synovial Sarcoma

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Abstract

The problem of a severe case of synovial sarcoma of the lower leg, in a young caucasian girl requires a difficult treatment option. Despite the usual decision to amputate, a never described surgical technique, involving the tetra partition of the Achilles tendon (associated with multiple tenodesis after radical excision of the tumor) was used, allowing for a better quality of survival than the one that would have resulted from amputation.

Introduction

Synovial sarcomas are highly malignant tumors that might require amputation or, at least, very extensive surgical resections [1]. The author describes a novel approach to avoiding a dropped and equinovarus foot following the needed radical excision of the muscles of the anterior and lateral compartments of the lower leg.

Case presentation

3 years old caucasian boy was admitted to the Pediatric Department of the Cancer Institute of Francisco Gentil, in
Lisboa, for investigation and treatment of a large tumor mass in the proximal ⅔ of the right lower leg, causing a paralytic equinovarus foot, showing already bilateral lung metastases. MRI of the leg showed a 10x7x8 cm mass lesion surrounding vascular and nerve structures but without criteria of invasion (Figure 1). Fine needle cytology, followed by tumor biopsy, showed a monomorphic Synovial Sarcoma.

Figure 1: MRI of the leg showed a 10x7x8 cm mass lesion surrounding vascular and nerve structures but without criteria of invasion: fine needle cytology, followed by tumor biopsy, showed a monomorphic Synovial Sarcoma.

The patient was treated with chemotherapy (MMT95, 935 arm B) for 4 months. with a good response: marked reduction of the tumor volume and radiological disappearance of the lung metastases. Due to the extent of the disease, the need for amputation had to be considered [2-4]. Nevertheless, considering the bad prognosis that had to be expected and the quality of life, it was considered that amputation should be avoided.

Under general anesthesia, surgery was performed. Radical tumor excision was possible but required resection of all the muscles involved (anterior tibialis, extensor hallucis longus, extensor digitorum longus, short and long peroneal) as well as a resection of the common peroneal nerve and part of the interosseous membrane) (Figure 2).
To avoid a dropped and equinovarus foot, the Achilles tendon was divided into four bundles. (Figure 3).

The three inner ones were sutured to the tendons of the resected muscles (two of them after being passed through the interosseous membrane) (Figure 4).

Figure 2: Anterior appearance of the tumor bed after radical excision

Figure 3: Lateral view: partition of the Aquiles tendon 3 bundles can be seen: posteriorly, on the outer side, de inner bundle, and then the 2 medial ones
Figure 4: A-Laterally, referencing of the medial bundles of the Aquiles tendon, (passed through the inter-osseous membrane) and referencing of the distal ends of the anterior tibialis, extensor allucis longus, and extensor digitorum longus. B- Tendon sutures completed

Figure 5: The child wearing the splint, in the immediate postoperative period

This way the patient could maintain a stable plantar foot (capable of oscillating but unable to extend or flex, due to the tenodesis) (Figure 5).
Discussion

Pathology showed complete resection, with safety margins. Apart from physiotherapy support, the child used a splint for some time. Although with a limited range of motion of the foot (no flexion/extension but plantigrade position), the child was able to walk and play almost normally, without any auxiliary means.

Unfortunately, although having had further chemotherapy treatment, the child showed lung metastases again and also developed a large, inoperable lesion, in the right thigh, dying around a year later. Nevertheless, she had no evidence of local recurrence and maintained, till the end, her capacity to walk and a fair quality of life (that amputation would have precluded).

Conclusion

Therapeutic decisions must include overall prognosis, not only aiming at survival but also the quality of survival. Partition of the Achilles tendon and its transposition across the interosseus membrane, followed by tendinosis of the tendons of the resected muscles, was an "emergency" solution. It permitted the stability of a plantigrade foot (despite the unavoidable loss of flexion and extension) for the entire duration of the child’s survival. This resulted in a far better quality of life for the child than amputation would achieve.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of Interest: Nil

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References


