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Granuloma formation secondary to Achilles tendon repair with nonabsorbable suture

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ABSTRACT

INTRODUCTION: Several complications can be observed after Achilles tendon repairs. In this study we aimed to report granuloma formation secondary to Achilles tendon repair with Ethibond (Ethicon INC, Somerville, New Jersey) suture.

PRESENTATION OF CASE: A 31 year-old man operated for Achilles tendon rupture. The Ethibond suture was used for primary repair. The patient attended to polyclinic with the complaints of swelling and discharge around the operation site four months after operation. A mass around distal portion of the Achilles tendon was detected. The granulomatous tissue was excised. Inside the mass Ethibond suture was detected. On histopathologic examination, typical findings of the foreign body reaction were observed. No microorganism was cultivated in the tissue culture. The patient has no complaint on the twelfth month control after surgery.

DISCUSSION: The results of primary repair of Achilles tendon are good but several complications were reported. In tendon repairs generally nonabsorbable sutures are used. The Ethibond is nonabsorbable, braided suture. In the literature, granuloma formations secondary to the suture materials such as polyglylactine and braided polyethylen–polyester after Achilles tendon repair were reported but granuloma secondary to the Ethibond is very rare.

CONCLUSION: Although Ethibond suture is a strong and safe material for Achilles tendon repairs it may cause soft tissue problems such as granuloma.

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1. Introduction

Several complications such as; wound problems or infection, can be observed after Achilles tendon repair procedures. Poor vascular supply and limited soft tissue coverage are leading causes of such problems.¹

Different suture materials are used in Achilles tendon repair. Various suture reactions in different tissues were reported against different materials.² In this study we aimed to report granuloma formation secondary to Achilles tendon repair with Ethibond (Ethicon INC, Somerville, New Jersey) suture.

2. Presentation of case

A 31 year-old man attended to the emergency department because of pain and difficulty during gait after sports trauma.

Achilles tendon rupture was detected after physical and radiologic examinations. The patient was operated on the next day. Under general anaesthesia, antibiotic prophylaxis was performed with 1 g cefazolin sodium. The patient was put in prone position. A 10 cm longitudinal incision was made just medial to the tendon. After debridement of the tendon stumps repair was performed with Krackow technique by the use of no:2 Ethibond suture. After closure of the incision a short leg cast was applied. The cast was replaced with ROM walker at fourth week and active exercises were started at the eighth week.

The patient attended to outpatient clinic with the complaints of swelling and discharge around the operation site four months after operation. On physical examination, a semi-mobile solid soft tissue mass, 4 × 3 cm in diameter was detected on former incision scar. There was a fistula on the mass. The infection parameters in laboratory tests were normal. On magnetic resonance imaging (MRI), a granulomatous abscess formation around distal portion of the Achilles tendon was detected.

Under spinal anaesthesia the patient was put in prone position. On former incision scar a new one which included the fistula was made (Fig. 1). The granulomatous tissue which was located

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Fig. 1. The intraoperative view of the lesion.

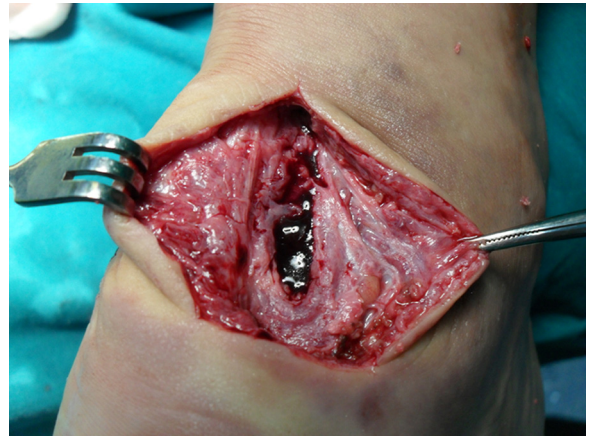


Fig. 4. The defect in the Achilles tendon after resection of the granuloma.



Fig. 2. The resected granuloma tissue.

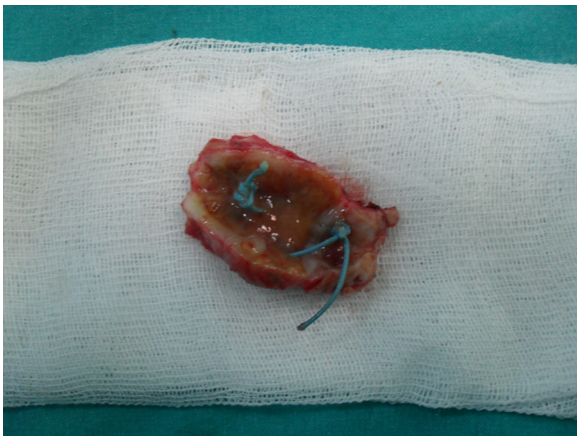


Fig. 3. The Ethibond suture in the granulomatous tissue.

on intact Achilles tendon was excised (Fig. 2). Inside the mass Ethibond suture was detected (Fig. 3). After excision of the mass a defect was formed on the tendon and it was repaired with nonabsorbable sutures (Fig. 4). On histopathologic examination, typical findings of the foreign body reaction, e.g. hemosiderine loaded macrophages, giant cells and eosinophilic infiltration, were observed. No

microorganism was cultivated in the tissue culture. The patient has no complaint on the twelfth month control after surgery.

3. Discussion

Achilles tendon ruptures are generally observed after sport traumas and usually in 30–39 males.³ The results of primary repair are good but several complications after surgery were reported.^{4–6} Despite high rerupture rates [13–30%] of nonsurgical treatment options,^{5,7} similar rates as surgical treatment were also reported.⁸ The wound complications of surgical treatment were reported as 7–13%.⁹ Smoking, diabetes mellitus, steroid use and obesity are main risk factors but it was well documented that suture materials may cause wound problems.^{1,10,11}

In tendon repairs, generally nonabsorbable sutures are used. The suture materials has to be strong enough to bear forces after surgery during healing and rehabilitation periods. The possible tissue reaction has to have no side affect on healing and fixation strength.^{2,11–14} The Ethibond suture is nonabsorbable and has repeating aromatic rings. It is consisted of high molecular weight long chain polyester and covered with polybutylate. Because of its coverage, it causes less tissue reaction and has better mechanical properties compared with the uncovered braided polyesters.¹⁵ In an animal model study, Esenyel et al. reported less tissue reaction compared with other nonabsorbable materials such as monofilament polypropylene and braided polyethylene–polyester (Fiberwire), six weeks after surgery.² In a study which compares sutures with high tension strength, least tissue reaction was observed against Ethibond.¹⁶ In a series which contains 109 gastric surgeries, granuloma was detected in five patients.¹⁴ The infection rates of multifilament braided Ethibond are higher than monofilament sutures because of easier adhesion of bacterias.¹⁷

In the literature, granuloma formations secondary to the suture materials such as polyglactine and braided polyethylen–polyester after Achilles tendon repair were reported but granuloma secondary to the Ethibond is very rare.^{1,11,18} Granulomas without fistula may be accepted as noninfected in the presence of negative laboratory markers but biopsies may cause contamination of the mass.¹³

4. Conclusion

Despite the strength of the Ethibond suture, it may cause some soft tissue problems. Granuloma formation is one of them and has to be kept in mind as a disabling complication.

5. Consent

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

Conflict of interest

Authors declare that there is no conflict of interest

Funding

There is no sponsor for this study.

Ethical approval

This is an retrospective report and there is no need for ethical approval.

Author Contributions

Adnan Kara: study concept or design, data collection, writing the paper.

Haluk Celik: data collection.

Ali Seker: writing the paper.

Mehmet Ali Uysal: data collection.

Metin Uzun:-data collection.

Melih Malkoc: writing the paper.

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