



Original article

# Foreign body reaction after trapeziectomy and Dacron interposition

## *Réaction à corps étranger après trapézectomie et interposition avec un anchois en Dacron*

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### Abstract

The purpose of this study was to evaluate patients who were treated with trapeziectomy and Dacron interposition in our hospital and to describe the incidence of foreign body reactions. Between 2004 and 2010, 10 women with trapeziometacarpal osteoarthritis underwent Dacron interpositional arthroplasty. One patient had surgery in both hands. Implants were removed in two patients, 5 and 8 years postoperatively. Histological analysis confirmed the presence of a foreign body reaction with giant cells in both cases. At a mean follow-up of 9 years, seven patients with the implant still in place were available for review and clinical examination. Mean DASH score was 32 and mean VAS for pain and satisfaction was 1.6 and 8.8, respectively. Mean grip strength was 11.4 kg and mean key pinch strength was 1.5 kg. Recent radiographs were available in nine hands. Seven out of nine hands had radiological signs of a foreign body reaction with bone erosion. A severe reaction occurred in three patients. We no longer use the Dacron implant and recommend careful monitoring of all patients in whom this implant has been used.

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**Keywords:** Osteoarthritis; Anchois; Trapeziometacarpal joint; Trapeziectomy; Interpositional arthroplasty; Dacron; Foreign body reaction

### Résumé

L'objectif de cette étude était d'évaluer des patients traités dans notre département par trapézectomie et interposition d'un implant en Dacron et de décrire l'incidence des réactions à corps étranger. Entre 2004 et 2010, dix femmes diagnostiquées avec une rhizarthrose invalidante ont été traitées par une arthroplastie avec interposition d'un implant en Dacron. Une patiente a été opérée des deux côtés. Deux implants ont été enlevés à cause de la douleur provoquée par une réaction à corps étranger 5 et 8 ans après l'opération. L'analyse histologique a confirmé la réaction à corps étranger avec présence de cellules géantes dans les deux cas. Lors d'un suivi moyen de 9 ans, sept patients avec l'implant toujours en place étaient disponibles pour interrogatoire et examen clinique. Le résultat moyen sur le Disabilities of the Arm, Shoulder and Hand (DASH) score était de 32. Ceux sur l'échelle visuelle analogique pour la douleur et la satisfaction étaient respectivement de 1,6 et de 8,8 sur 10. La force de préhension moyenne était de 11 kg et la pince pouce-index moyenne était de 1,5 kg. Des radiographies récentes étaient disponibles pour neuf mains. Sept des neuf cas présentaient des érosions osseuses de réaction à corps étranger. Trois patientes présentaient une réaction sévère. Actuellement, nous n'utilisons plus l'implant en Dacron et nous recommandons une surveillance attentive de tous les patients ayant reçu cet implant.

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**Mots clés :** Rhizarthrose ; Anchois ; Articulation trapézo-métacarpienne ; Trapézectomie ; Arthroplastie d'interposition ; Dacron ; Réaction à corps étranger

## 1. Introduction

Osteoarthritis of the trapeziometacarpal (TMC) joint is one of the most common degenerative joint diseases. It is strongly related to the normal aging process, more common in females and extremely variable with regard to the pain and disability

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that it causes [1–3]. When conservative measures fail, surgery may be required. A variety of techniques have been described in which the main treatment goals are pain relief, stability, mobility and strength. Such procedures include ligament reconstruction, extension osteotomy of the first metacarpal, arthrodesis, hemiarthroplasty, total joint replacement, trapezium excision, and total or partial trapeziectomy with ligament reconstruction and/or interpositional arthroplasty. In the latter, either autografts, allografts or synthetic materials can be interposed [4]. To date, there is no evidence for superiority of a single surgical treatment. Total or partial trapeziectomy with or without suspensory ligament reconstruction is a frequently performed procedure [5,6]. To avoid proximal migration of the first metacarpal, interpositional arthroplasty can be added. The use of synthetic devices can make the procedure easier, quicker and it avoids donor site morbidity [4]. The Dacron “anchovy” implant (Anchois Ligastic<sup>®</sup>, Orthomed SA, St Jeannet, France), composed of polyethylene terephthalate, is one of many synthetic implant options; it was first described in 2003 by Voulliaume et al. [7]. However, complications such as foreign body reactions have been reported [8–10].

The purpose of this study was to evaluate patients who were treated with a Dacron implant after a mean follow-up of 9 years with clinical and radiographical examination and to look for a foreign body reaction.

## 2. Materials and methods

Between 2004 and 2010, 11 hands in 10 women underwent trapeziectomy with interposition of a Dacron implant at our hospital. The indication for surgery was Eaton stage 3 or 4 TMC osteoarthritis [11], recalcitrant to conservative treatment. In patient 1 (Table 1), the Dacron implant was used after a failed trapeziectomy with tendon interposition and ligament reconstruction (Burton–Pellegrini procedure). Patient 5 was operated because of nonunion following trapeziometacarpal arthrodesis.

All patients were operated on by the same surgeon (NH). A single dose of prophylactic antibiotics was administered prior to induction of general anesthesia. An upper arm tourniquet was applied. A dorsal approach was used to access the TMC joint. The capsule was incised between the extensor pollicis brevis and abductor pollicis longus tendons. Total or partial trapeziectomy was performed and then the Dacron implant was inserted. The capsule was closed with nonabsorbable sutures. Postoperatively, a plaster of Paris splint was applied for 1 week, immobilizing both the thumb and wrist. A short cast was used for the next 3 weeks to immobilize the TMC and first metacarpophalangeal joints. This was followed by a removable splint until the patient was pain free.

This retrospective study was approved by our hospital’s ethics committee (B670201525172). All patients were contacted by telephone to ask for their cooperation. A 49-year-old patient, who underwent partial trapeziectomy in July 2006, could not be contacted and was lost to follow-up. Nine women (10 implants) were available for assessment. Side, age at surgery, date of surgery and type of operation are shown in Table 1. In August 2015, a questionnaire was sent to the patients with the Disabilities of the Arm, Shoulder and Hand (DASH) score [12,13] and Visual Analogue Scale (VAS) [14] for pain and satisfaction. The DASH score collects information about the patient’s symptoms and ability to perform certain activities. This score ranges from 0 “no disability” to 100 “maximum disability”. VAS scales prompt the patient to make a mark on a 10 cm long line between two points. A VAS score for pain of 0 means no pain and 10 the worst possible pain. A VAS score for satisfaction of 0 means no satisfaction and 10 complete satisfaction. Patient 1 died prior to review; hence no questionnaires were filled out. However, this patient was not excluded for the analysis because recent radiographs and some clinical data were available in her medical file.

All patients were invited to return to our hospital for clinical examination and radiographic imaging in August 2015.

Table 1  
Demographic information, subjective outcome scores and clinical results of the patients treated with a Dacron implant.

Patient number	1	2	3A	4	5	6	7	8	9	3B
Side	L	R	L	L	R	R	R	R	R	R
Age at surgery	60	76	40	49	60	58	66	59	51	45
Date of surgery	Aug 04	Nov 04	Jan 05	Jan 06	Feb 06	May 06	May 06	Jul 06	Sep 06	Jul 10
Trapeziectomy	T	T	P	T	T	T	T	T	P	P
Bone erosions	Y	Y	N	Y	Y	N	n.a.	Y	Y	Y
Implant removed	Y	N	N	Y	N	N	N	N	N	N
DASH score	n.a.	12	37	51	68	9	22	9	61	41
VAS pain	n.a.	0	0	0	7	1.2	1.4	1.4	2	0
VAS satisfaction	n.a.	10	8	10	9	10	10	9.3	8.4	6
Grip strength (kg)	n.a.	10 (10)	20	16 (26)	2 (2)	22 (15)	10 (10)	15 (24)	2 (30)	10
Key pinch (kg)	0.5	1 (2)	2	2.5 (3)	1 (0)	2 (2.5)	2 (3)	3 (3.5)	0 (4)	1
Kapandji score	n.a.	9 (9)	10	10 (10)	7 (7)	10 (10)	10 (10)	10 (10)	7 (10)	9
Wrist										
Flexion	n.a.	55 (45)	70	50 (90)	65 (70)	80 (80)	60 (65)	75 (75)	60 (60)	50
Extension	n.a.	50 (50)	75	55 (80)	60 (70)	65 (65)	40 (45)	50 (65)	70 (70)	70
Radial deviation	n.a.	20 (10)	10	10 (20)	10 (20)	10 (10)	20 (15)	20 (25)	40 (50)	10
Ulnar deviation	n.a.	45 (40)	60	60 (60)	55 (40)	40 (40)	45 (45)	55 (55)	30 (60)	60

Values between parentheses refer to the opposite side. n.a.: data not available; L/R: left/right; T/P: total/partial trapeziectomy; Y/N: yes/no; DASH: Disabilities of the Arm, Shoulder and Hand; VAS: Visual Analogue Scale.

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