

## Spontaneous resorption of extruded iliac crest graft after cervical anterior discectomy

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### Abstract

**Background:** Disc surgery for cervical disc herniation with or without an iliac graft is a very specific intervention in neurosurgery. Graft migration is a very rare but well-known complication. Autogenous tricortical iliac crest graft migration or extrusion after anterior cervical discectomy is a potential complication that generally may require revision surgery.

**The aim:** to report a very rare case of total resorption of an extruded bone graft in a prevertebral anatomic area managed conservatively.

**Case report:** We report a case of graft extrusion or migration in a single-level C3-C4 anterior cervical disc fusion, which was managed conservatively as the patient remained asymptomatic. Follow-up x-ray, computed tomography scan (CT) and magnetic resonance imaging (MRI) at 8 weeks showed total graft resorption with good cervical spine cord decompression.

**Conclusion:** Radiological postoperative regular checks, mainly in the first weeks following the anterior cervical discectomy and fusion operation, are essential to detect graft extrusion. Total resorption of extruded iliac crest graft in prevertebral anatomic area is rarely reported and needs more study.

**Keywords:** Anterior cervical discectomy; Iliac graft; extrusion; X-ray; MRI; Total resorption of graft.

### 1. Introduction

Anterior cervical discectomy and fusion (ACDF) for degenerative pathologies or in traumatic disease is one of the most popular practices in neurosurgery [1-4].

ACDF without instrumentation was accepted as a method in low-cost countries without any resources, and in some one level discectomy, in the past in some cases. The iliac crest is widely considered the gold-standard autograft for ACDF procedures due to its osteoinductive, osteoconductive, and osteointegrative properties [3].

Graft extrusion or migration, is among the more significant complications occurring after ACDF, occurring in approximately 2% of patients [1-3]. The migration or dislodgement of these grafts may impinge on surrounding vital anatomic structures or result in a pseudoarthrosis, mandating surgical revision [3]. Conservative management was rarely used if the patient is asymptomatic [1].

We case describes a patient who presented cervical graft extrusion after ACDF without a plate; managed conservatively, and the follow-up showed total resorption of the bone graft without any sequela. A brief review of literature is discussed.

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## 2. Clinical case

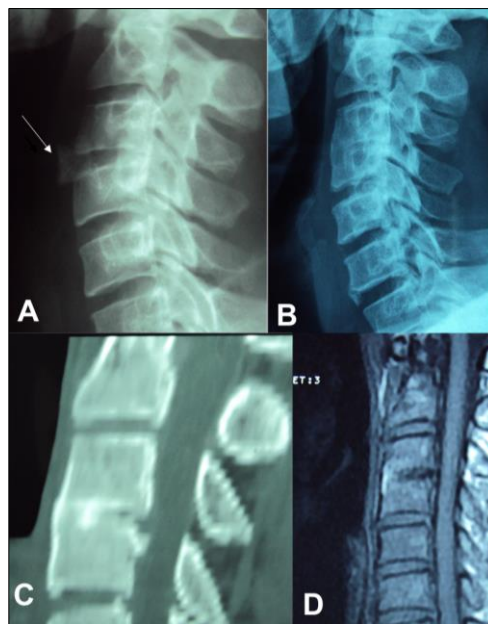
A 37-year-old man is admitted for right cervical brachial neuralgia on C3-C4 disc herniation operated with discectomy and placement of a tri-cortical iliac graft. The evolution was favorable with the disappearance of the cervicobrachial neuralgia. The cervical lateral x-ray postoperative control showed extrusion of the graft migration of the iliac graft in the prevertebral area (**Figure 1A**). The patient was asymptomatic and had no dysphagia or discomfort in the neck, it was decided to manage the patient conservatively. The patient was followed by a cervical lateral x-ray weekly, cervical CT scan and MRI. Postoperative MRI showed total resorption of the graft and fusion with good decompression of the spinal cord after 8 weeks (**Figure 1 D**). With 4-year follow-up, the patient is asymptomatic.

## 3. Discussion

This patient presented an extruded iliac crest graft cervical anterior following ACDF for disc herniation revealed by cervical brachial neuralgia. The resorption of the extruded bone graft was documented by serial x-ray, cervical computed tomography scan (CT) and magnetic resonance imaging (MRI). The migration was asymptomatic without any clinical sign. These findings are very rare and rarely reported in the neurosurgical literature [1,2].

Allogenic, tricortical iliac crest bone graft for disc replacement without plating was routinely used 20 years ago [1,3]. Replacement of the disc by iliac crest graft takes advantage of its natural biocompatibility and the associated low risk of rejection, as well as the potential to reintegrate with the adjacent bone.

Graft extrusion after anterior cervical discectomy is a rare potential complication [1], that may require revision surgery, but because of the low incidence, the factors associated with graft movement and the results of treatment for this entity are not well studied in the neurosurgical literature. Face to anterior migration of a cervical graft, the options available are removal of the graft or replacement of the graft along with anterior cervical plating [1]. This complication was rarely reported in neurosurgical literature [4]. Rarely, some cases were managed conservatively. Kumar R., and al., [1], reported a case of patient presented a spontaneous resorption of extruded iliac crest graft in a case of high cervical C2-C3 myelopathy managed conservatively with total resorption of the graft followed by cervical x-ray of 6 weeks. The resorption is a rare event. Djoubairou BO, and al., [1]. reported excluded bone crest graft in 0.18 % in ACDF by bone graft without plating [4].



**Figure 1** (A) Postoperative cervical lateral x-ray showing anterior migration of iliac crest bone graft in C3-4 level (white arrow). (B) five-month, lateral x-ray and (C) CT scan showing total spontaneous resorption of the graft. (D) Sagittal cervical T1-weighted MRI showing total resorption of the graft and fusion with good decompression of the spinal cord. Spontaneous resorption of extruded graft after C3-C4 cervical anterior discectomy.

Bone resorption is the process by which the bones are absorbed and broken down by the body. Osteoclast cells are responsible for the breakdown of bone minerals thus releasing calcium and phosphorous into the bloodstream. This resorption of the graft has different causes. Its importance depends on the technique of graft, its location, the influence of soft tissues and muscular tissues [1,5,6]. The mechanism of aseptic bone resorption is very known and reported in odontomaxillary surgeons implantology.

Thus, in selective cases, graft extrusion can be managed conservatively with serial follow-ups. Some factors of risk migration or extrusion was documented in the literature. 1- A higher location of the graft could be a favorable factor for conservative management as the lateral compartment of the neck is comparatively wider at this level leading to decreased compression over the esophagus. 2- Meticulous operative technique. 3- The size of the graft and 4- Cervical corpectomy and fusion with autogenous strut grafting has an increasing migration–displacement rate with the increasing number of segments removed and the increasing length of the graft. Other factors affecting resorption of the extruded graft need to be analyzed further and need more studies [1].

In the previous literature, it was admitted that the patients that presented with postoperative graft movement but not complete dislodgement and without signs of neural or respiratory compromise or dysphagia did not need surgery of replacement or replacement of graft and plating. But this rare case, graft extrusion was totally resorbed in 8 weeks.

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#### 4. Conclusion

Regular checks, mainly in the first weeks following the anterior cervical discectomy and fusion operation, are essential to detect and then intercept any abnormality at the grafted site. Spontaneous resorption of extruded iliac crest graft after cervical anterior discectomy is a very rare event. Total resorption of extruded iliac crest graft in cervical prevertebral anatomic area need more study.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

##### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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