

# Introduction

- Anterior cervical discectomy (ACD) with fusion is a widely accepted treatment for cervical disc diseases.
- Smith and Robinson and also Cloward  
Tricorticate strut bone  
The donor site morbidity
- Titanium cages  
High success rates in terms of clinical outcome. Although the main advantage is the lack of donor site morbidity, significant artifacts on CT/MRI
- Development of a radiolucent graft.  
Polyetheretherketone (PEEK) *its elastic module is* Reported 97.5% healing  
*Excellent results*
- similar to that of bone.

# ACD with PEEK. SPINE Volume 36, Number 1, pp 15–20

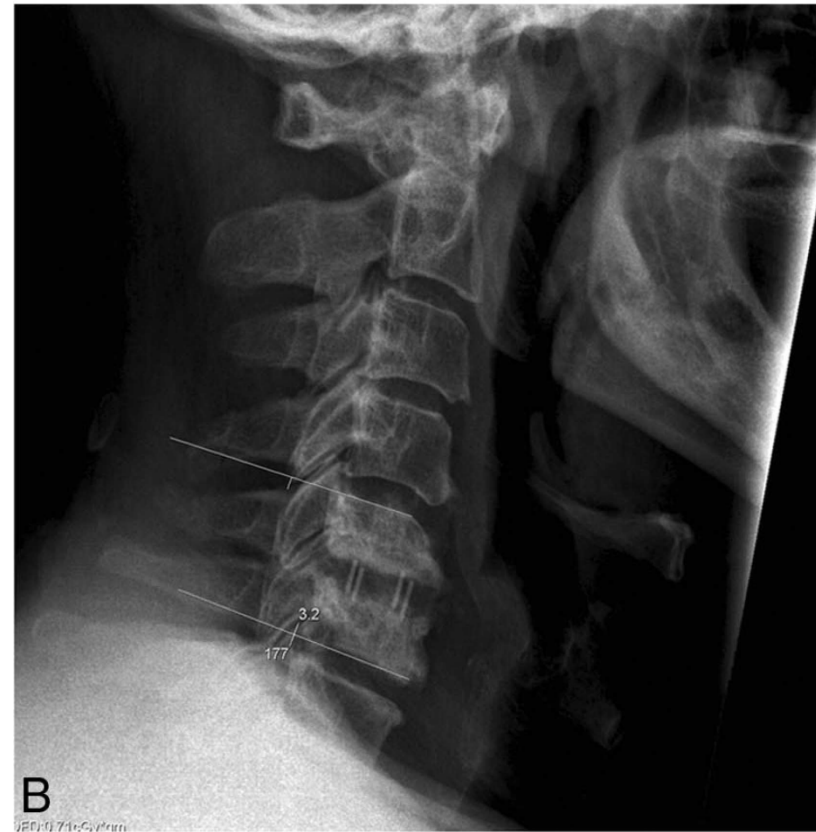
## NU with no subsidence



## Non-union with subsidence



# Nonunion and subsidence



# Fusion status

- 1. migration On the basis of the lateral X ray
- 2.subsidence of the PEEK cage On the basis of the lateral X ray
- 3. **Fusion** Presence of continuous trabecular bone bridges in at least one of the following locations:
  - anterior, within, or posterior to the PEEK
- **Subsidence** was analyzed [Gercek *et al*,9]
- *it was judged to be present* if 1 or both of the 2 measured parameters, either anterior disc space height or posterior disc space height, changed by at least 3 mm.
- **Migration** was present if the distance between the cage and the posterior wall changed by 3 mm or more compared with the images before discharge.
- Although dynamic evaluation by means of flexion and extension lateral radiographs is used in some studies to confirm fusion, the focus in our study was to demonstrate bony fusion rather than possible functional fusion.
- CT is better but more radiation

# Summary

1. The present study demonstrated an unexpectedly high rate of non-union in ACD with empty PEEK cages. Fusion status, however, did not influence overall clinical outcome or neck pain.
  2. Titanium spacer: A major disadvantage of these cages is the distinct metallic artifacts they produce on postoperative imaging (CT or MRI).
- Radiographic assessment of bony fusion after PEEK cage implantation shows surprisingly high nonfusion rate. [72%]
  - No correlation between fusion status and clinical outcome.
  - Long-term (5 years) follow-up has to demonstrate the course of the treated segment.
  - CT has greater accuracy in the determination of bone fusion, we did not use CT routinely
  - due to the higher radiation exposure.

# Cervical radicular disease

- 1. Similar to rotator cuff disease, degenerative disk disease is age related. **Beginning in the third decade of life**, the hydration of the nucleus starts to diminish, accompanied by fissuring of the annulus.
- 2. a prevalence of cervical radiculopathy of **3.5 per 1,000** individuals.
- 4. Natural course: At long-term follow-up of 10 to 25 years, Gore et al<sup>27</sup> reported that nonoperative management was associated with complete symptom resolution in 43% of patients, partial resolution in 25%, and continued moderate to severe pain in the remaining 32%.
- In another long-term study, by Lees and Turner,<sup>38</sup> of 51 patients followed up for 2 to 19 years, 43% of the patients had only a single episode of radicular pain, 29% had mild symptoms, and the remaining 27% had more substantial symptoms.
- Surgical treatment: Rapid improvement of symptoms is typical, and prolonged relief of symptoms can be expected in approximately 70% to 90% of patients after either anterior or posterior surgery.
- ,

- Relief of arm pain and paresthesia were achieved in 96% of patients and resolution of the motor deficit in 98%.
- Arnasson et al<sup>4</sup> found that axial neck pain persisted in roughly one-half of patients irrespective of conservative or surgical treatment, but radicular symptoms responded substantially better to surgery, with over 70% of patients having improved.
- After anterior surgery, Lundsford et al<sup>40</sup> found that 77% of patients had complete relief of symptoms initially, yet 38% had recurrent symptoms at some time during the 1 to 7 years of follow-up. At a mean follow-up of 6 years after anterior discectomy and fusion
- Bohlman et al.<sup>7</sup> found that all patients had improvement or resolution of their preoperative motor deficit.
- Sensory deficits resolved in 71 of 77 patients.
- Only 6 of the 122 total patients had persistent radicular pain to any degree, but neck pain was present in 37.