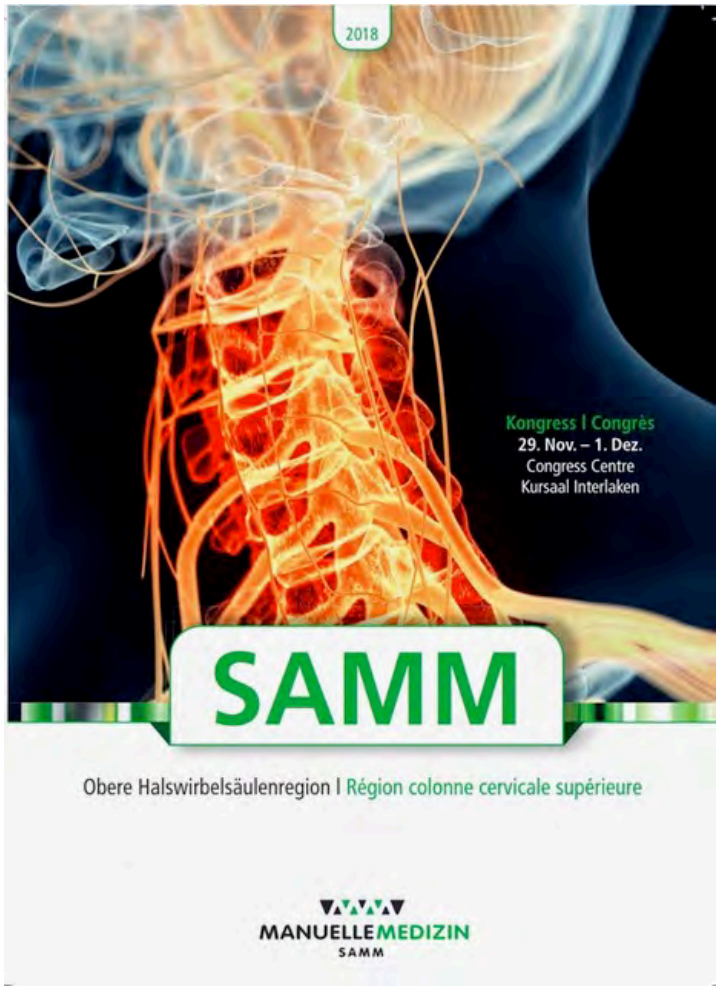
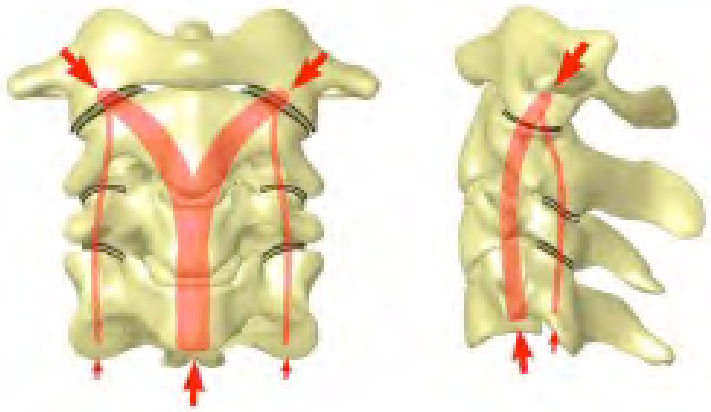


Indikation und Chancen mit wirbelsäulenchirurgischen Eingriffen bei Degenerativen Veränderungen der (oberen) Halswirbelsäule

PD. Dr. med. Dezső J. Jeszenszky
Chefarzt
Wirbelsäulenchirurgie
Orthopädie und Neurochirurgie



SCHULTHESS KLINIK
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Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- „Die Hauptfrage an den Chirurgen von den konservativen Klinikern ist der Umgang mit der schweren schmerzhaften atlantoaxiale Arthrose C1/2; wir sehen ja immer wieder Fälle die funktionieren ohne Operation teilweise nach vereinzelten Infiltrationen des Gelenkes und teilweise Normalisierung der Hyperlordose-Haltung.“
- „Dann gibt es eben auch die „harten“ Fälle mit Rezidiv Beschwerden und teilweise unhaltbaren Beschwerden.“
- „Und dort sehen wir gute Resultate aber auch unbefriedigende Resultate schmerzmässig.“
- „Somit stehen wir mitten in der wohl auch für Euch schwierigen Indikationsdiskussion. Auch Frage nach Einbezug kaudal anschliessender Segmente, welche oft auch deg. verändert sind.“

Dr. med. Ulrich W. Böhni
Präsident der WBK und Dozent

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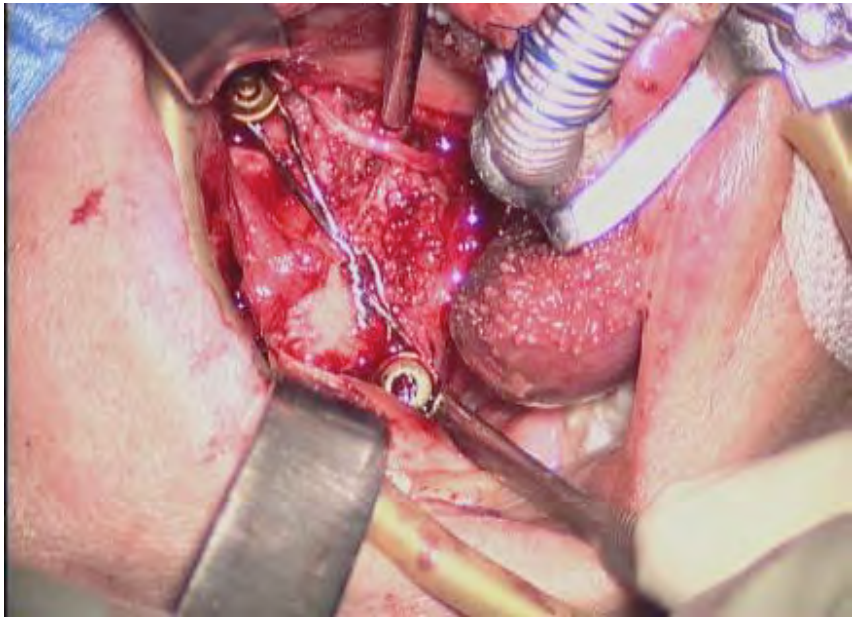
Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- Indikation allgemein
- Indikation bei degenerativen Veränderungen
- Operative Möglichkeiten
- Chancen



SCHULTHESS KLINIK
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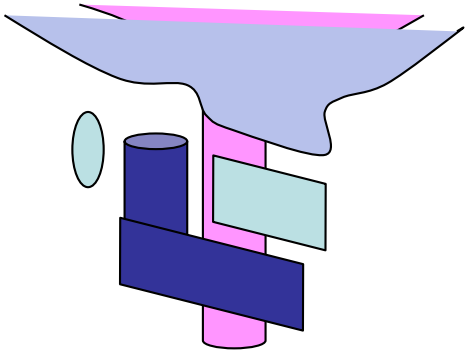
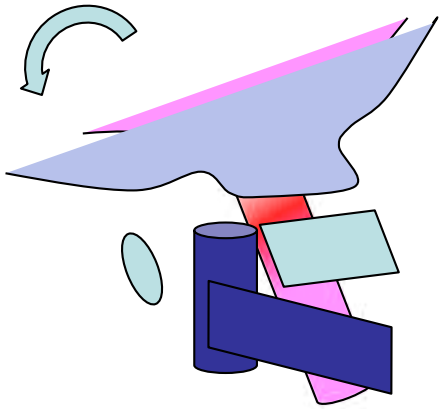
Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- **Indikation allgemein**
- Indikation bei degenerativen Veränderungen
- Operative Möglichkeiten
- Chancen

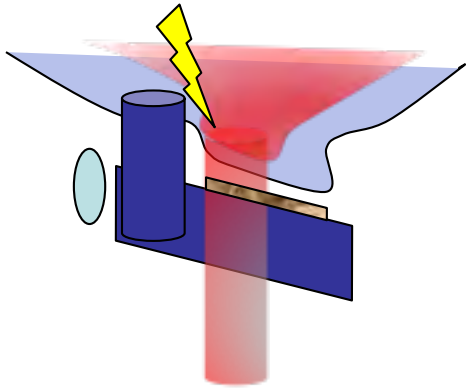
Schmerz



Fehlstellung/Instabilität



Neurologie



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Indikation zur kraniozervikalen Chirurgie

- Fraktur
- Tumor
- Kongenitale
- Syndrom
- Entzündung
- Degenerativ

Diese oben erwähnten Pathologien können zu Einengungen, neurologische Störungen, Instabilitäten führen.

Fallbeispiel:Basement stairway

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Case Report

- 54 year, female
- Falling into a basement stairway in New York
- head and cervical spine trauma
  fracture of C1 anterior arch (Jefferson-like)
- (Mild traumatic brain injury)

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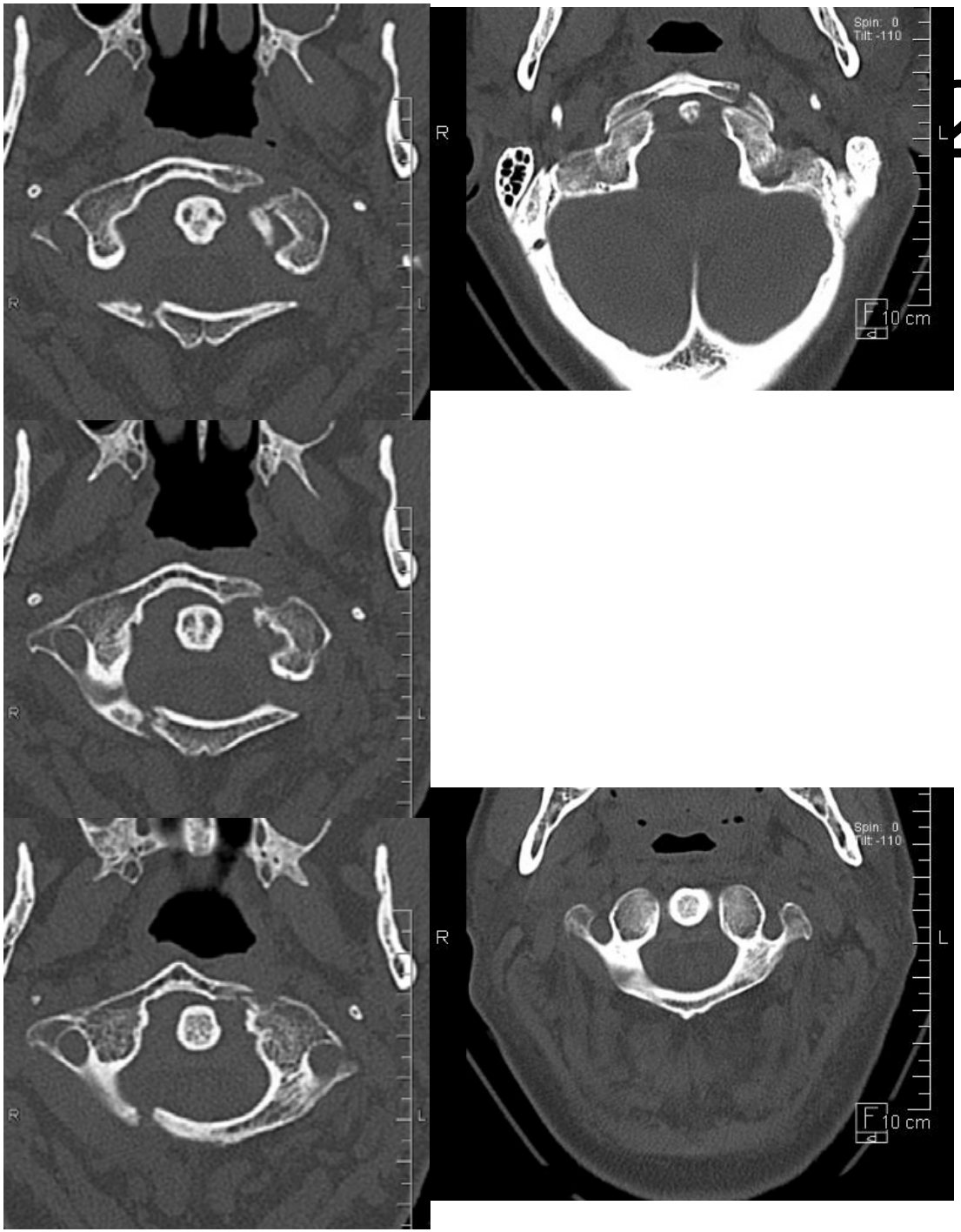

2010

X-ray 06.12.10

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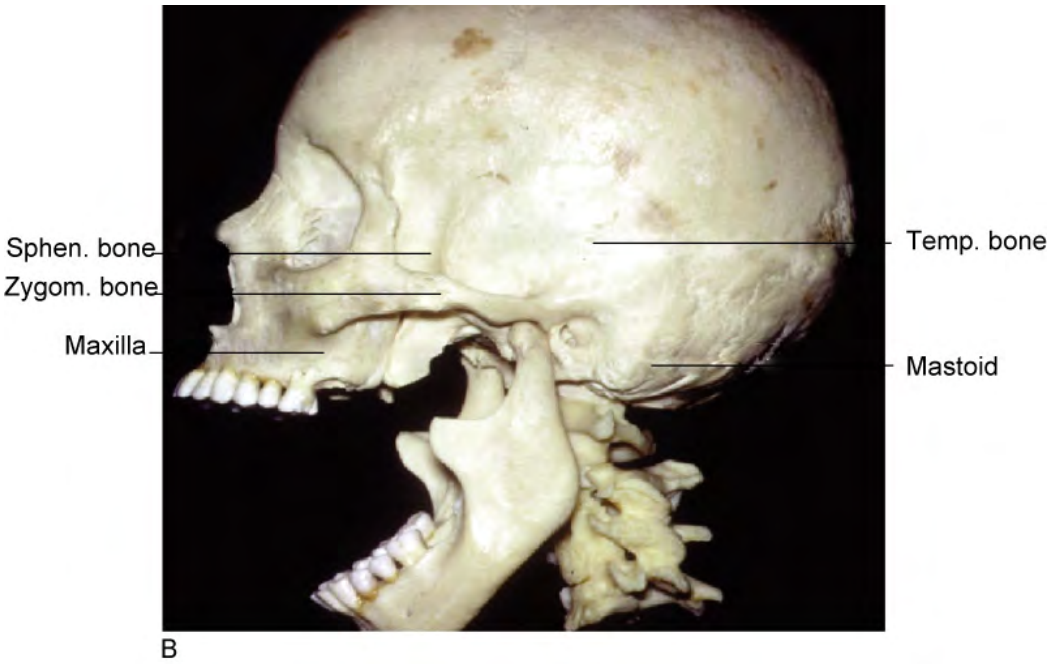
Preoperative management

- X-ray, MRI, CT, other
- Opening the mouth possible?
- Desinfection
- Antibiotic treatment
- Tracheostoma (when necessary)
- Nasal or oral intubation
- Special instruments



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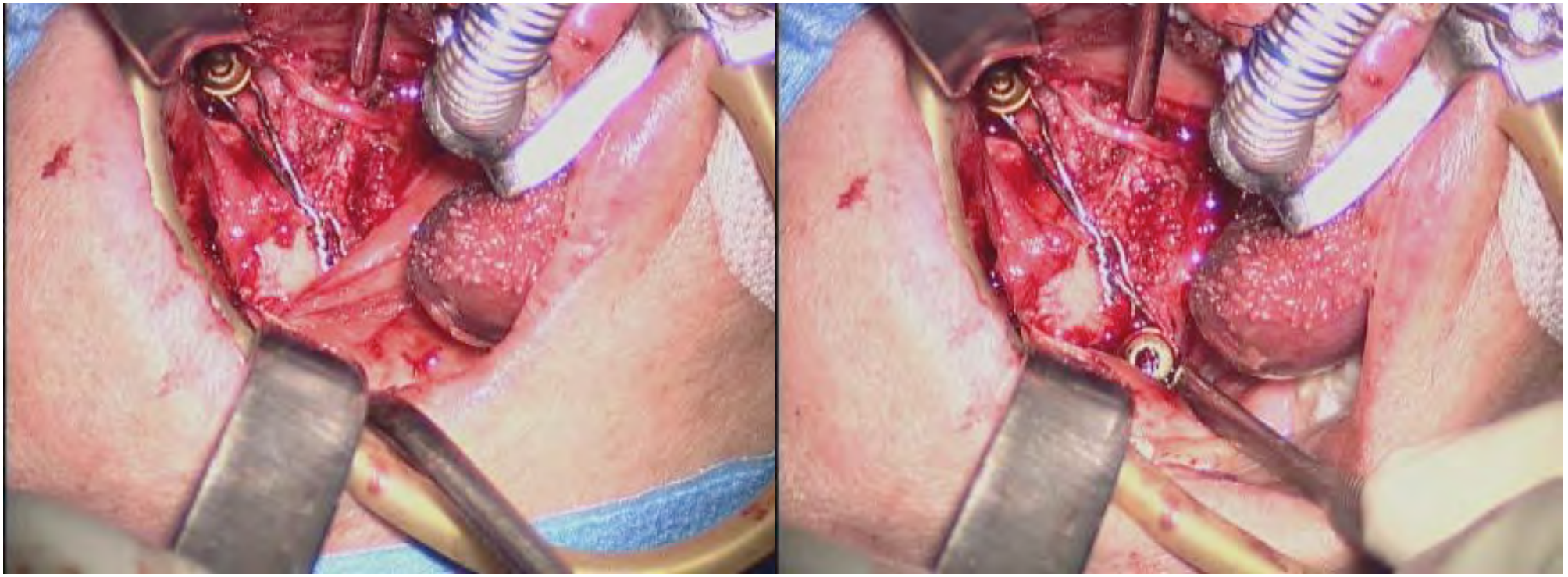

10.12.2010

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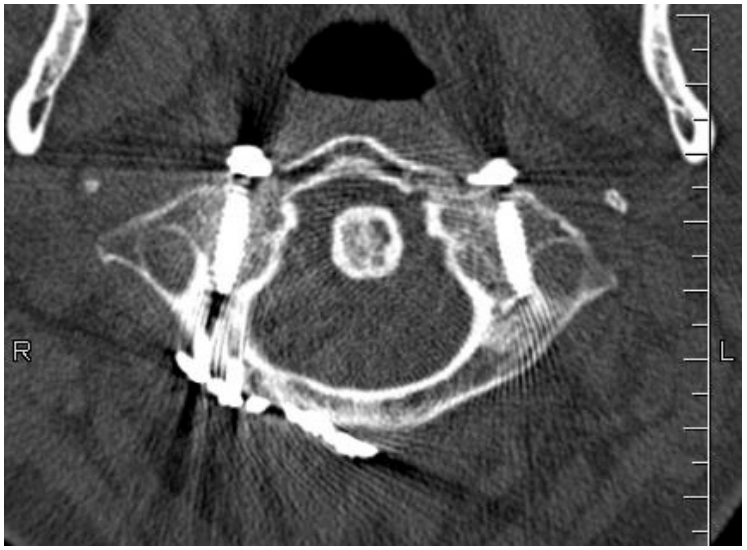
X-ray 14.12.10

SCHULTHESS KLINIK
SPINE CENTER

CT 27.06.2011



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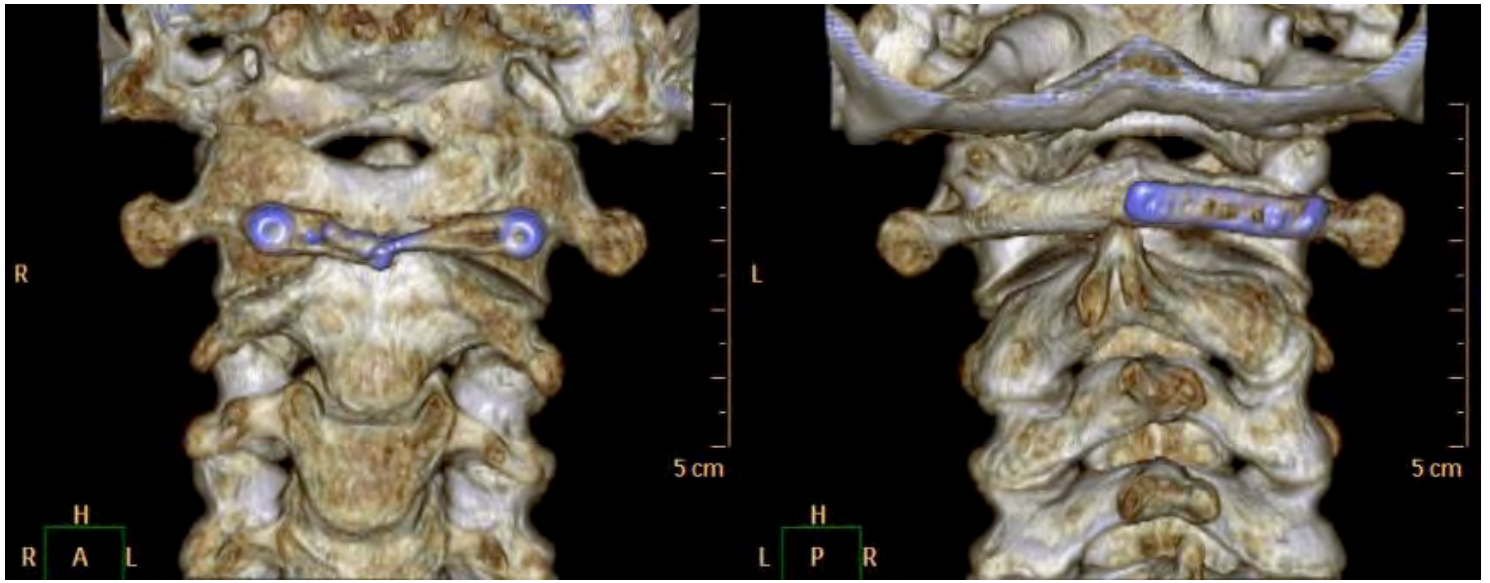
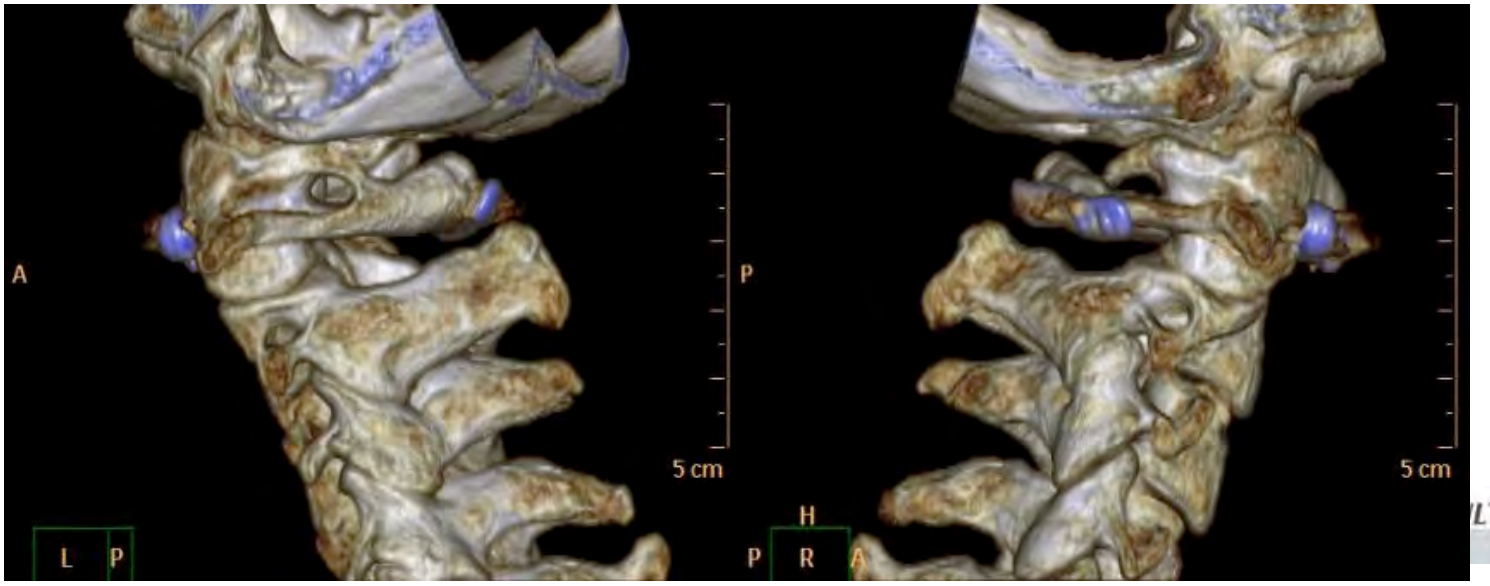
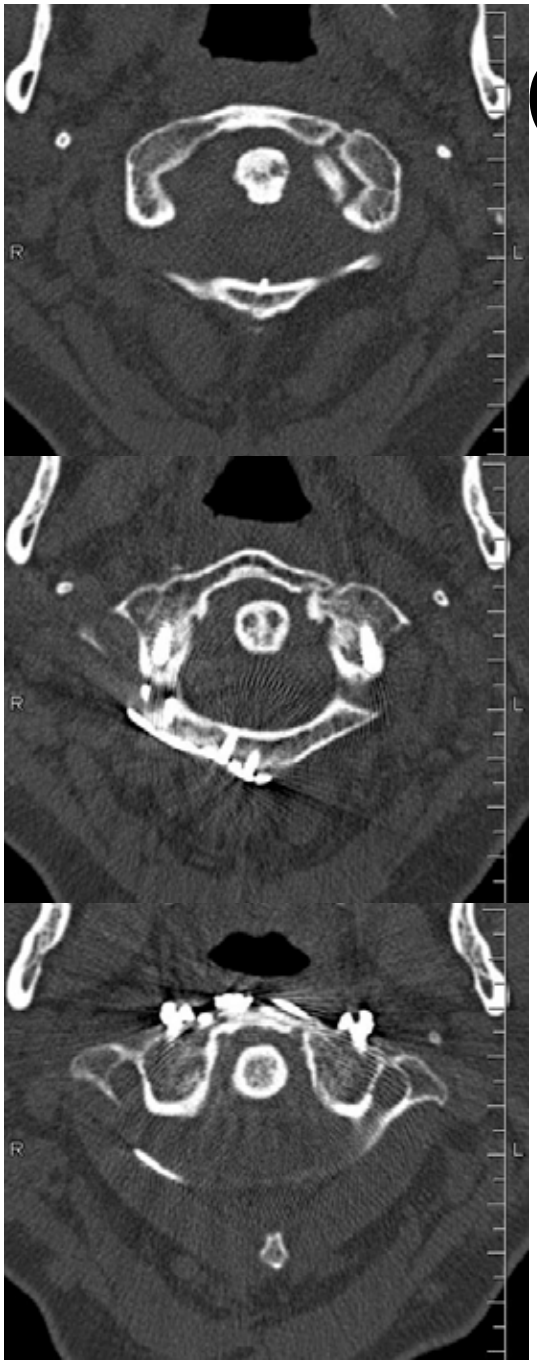
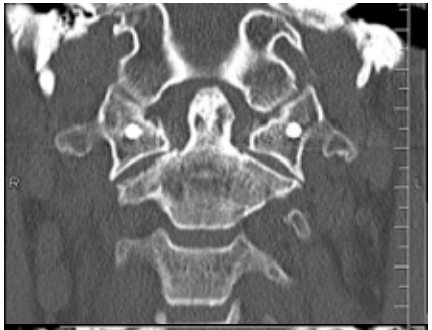
CT 3D 27.06.2011

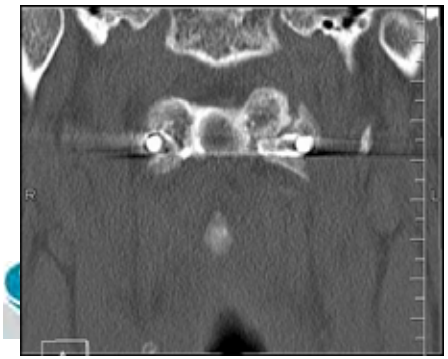




CT 27.06.2011







Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- Indikation allgemein
- **Indikation bei degenerativen Veränderungen**
- Operative Möglichkeiten
- Chancen

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Indikation bei degenerativen Veränderungen

- Wenn konservative Massnahmen nicht mehr helfen
- Wenn die chirurgische Therapie gute Resultate bringt

Wirbelsäule: Rheumatoid Arthritis

Häufigste Probleme sind:

- Instabilität: HWS / LWS
- Osteoporose > Fraktur – kyphotische Deformität
- Stenose
- Schmerz

N° 1 → **Cervical spine (C1/2)**

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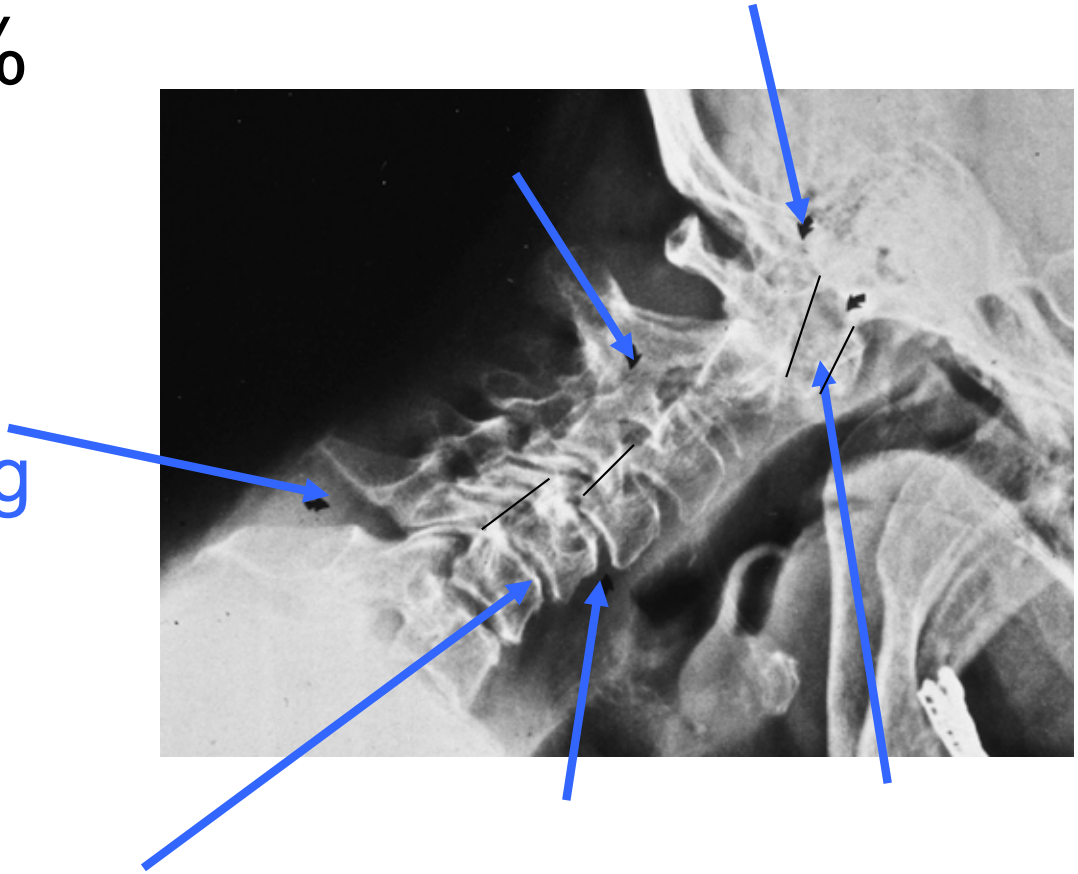
Halswirbelsäule: Veränderungen durch RA

Subluxation C1/2: 15-20%

Untere HWS: ca. 15%

- Diskus
- Bandistabilität
- Knochenresorption
- Endplatten Zerstörung
- Versteifung
- Weichteilwucherung (Pannus)



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Probleme der RA

- Instabilität
- Arrosion
  - Dünne Facetten
- Ankylose
- Osteoporose
  - Schwache Verankerung

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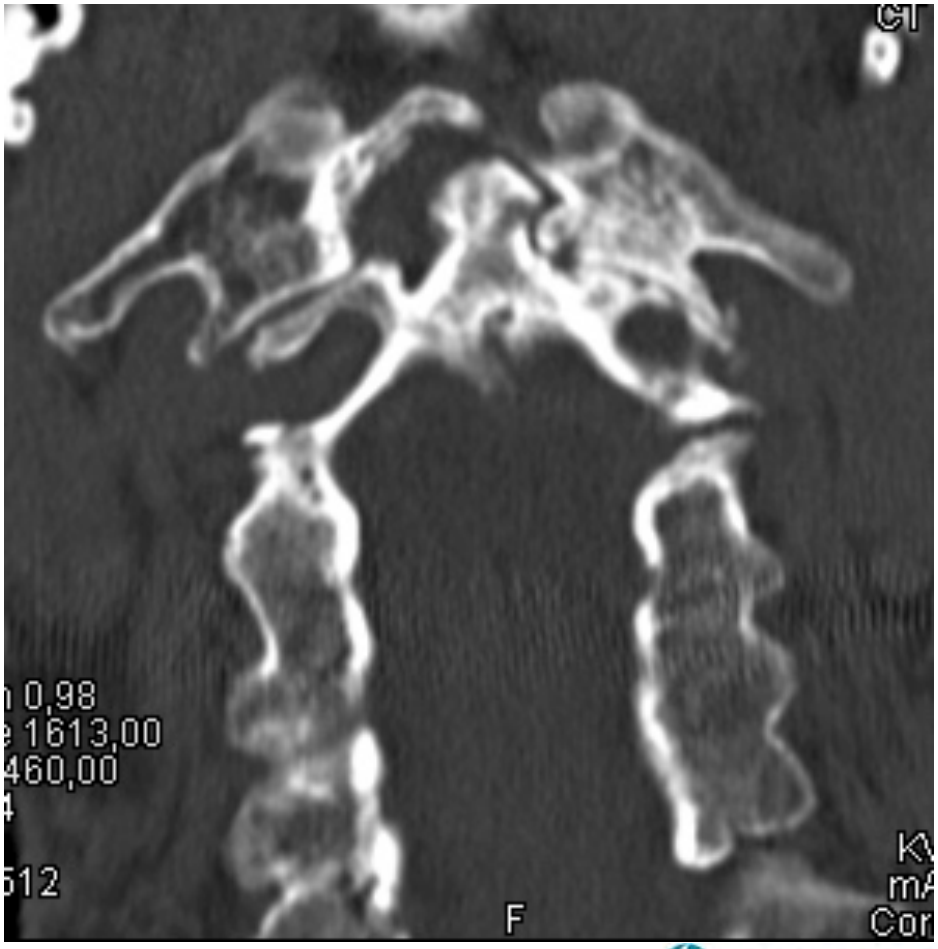
Extensive Degenerative Disease

- Ältere Patienten
- Schlechte Knochen Qualität
- Multilevel disease



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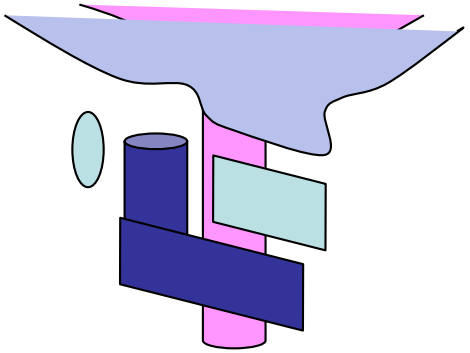
Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

Indikation bei degenerativen Veränderungen

- Schmerzen
- Instabilität
- Deformität
- Neurologische ausfälle

Schmerz



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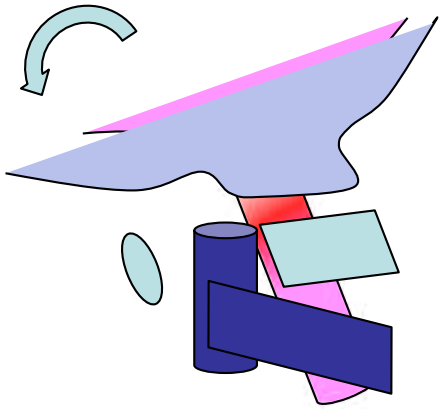

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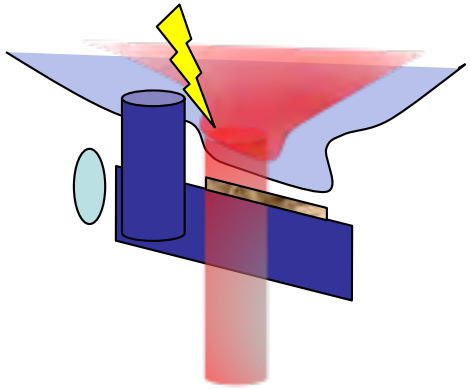

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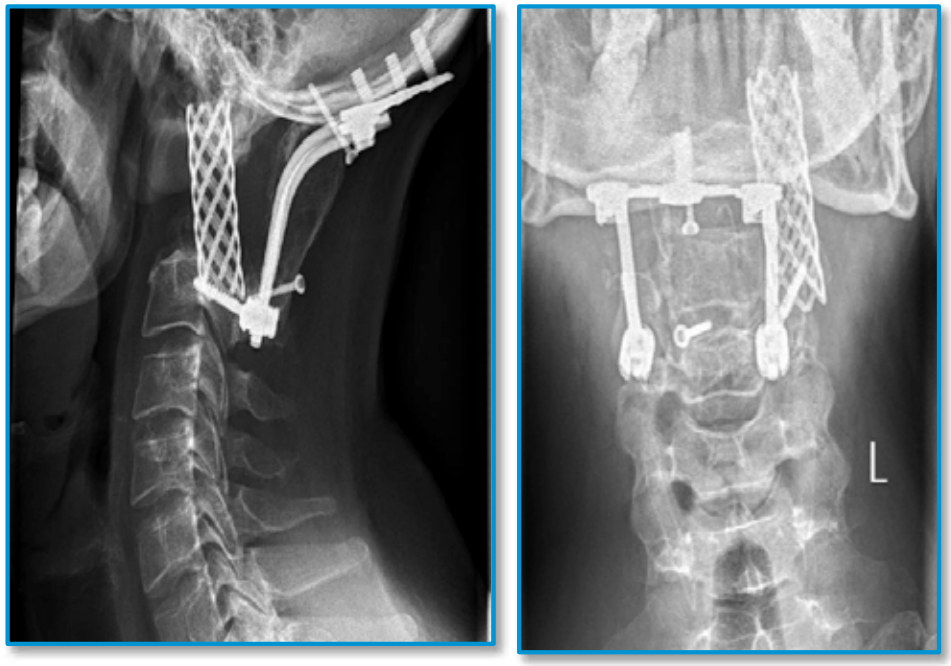
Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- Indikation allgemein
- Indikation bei degenerativen Veränderungen
- **Operative Möglichkeiten**
- Chancen



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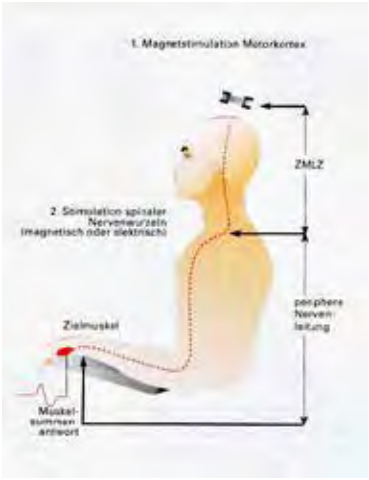
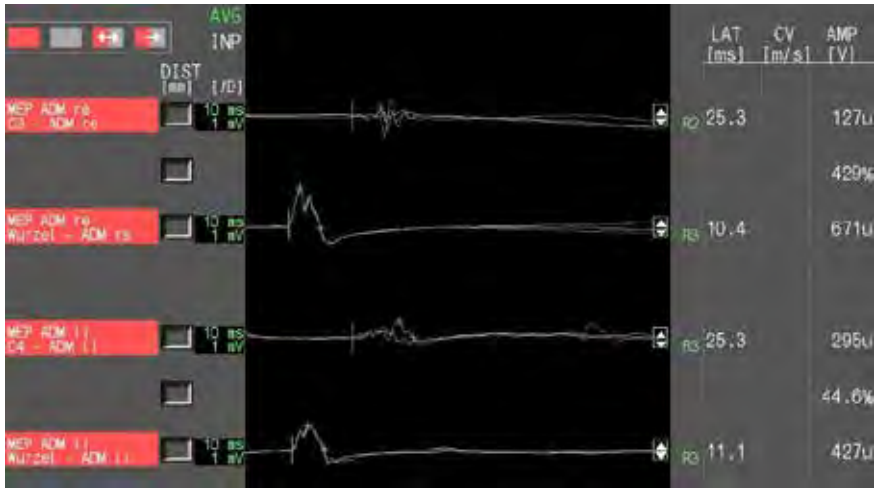
Operative Möglichkeiten

- Team Work!
- Neurologie & Elektrophysiology
- Rheumatologie
- Manuelle Medizin
- Anaesthesiologie
- Physiotherapie
- Internist, Onkologie
- Pediater
- Andere





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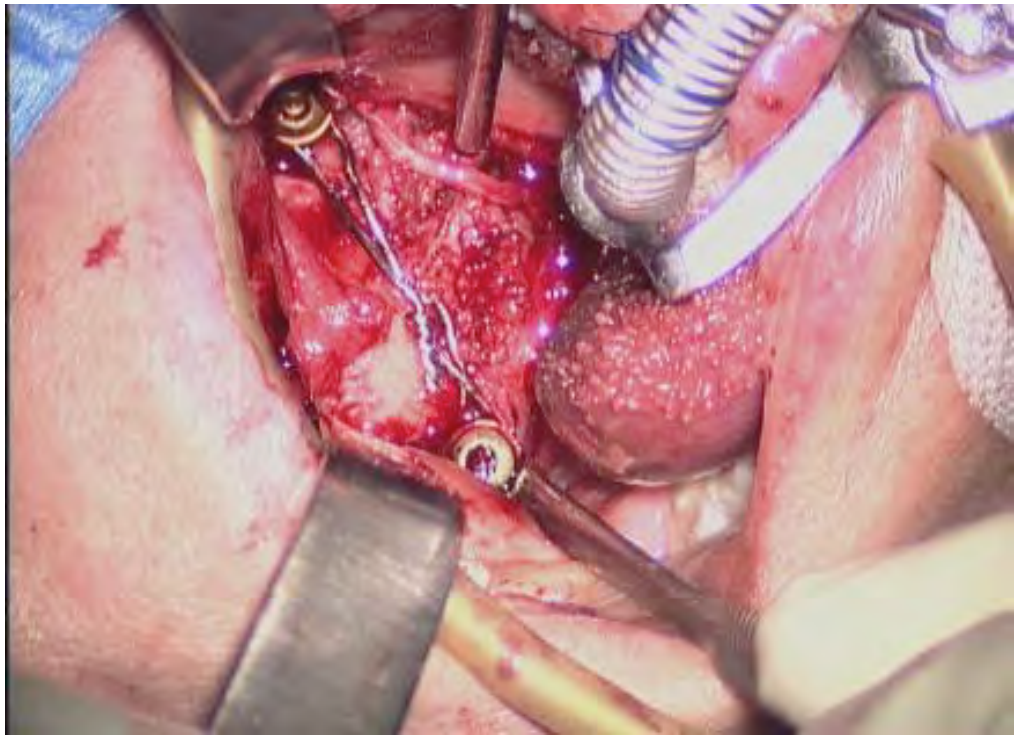
Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

Operative Möglichkeiten

- Stabilisation
- Korrektur
- Dekompression

- Von hinten
- Von vorne



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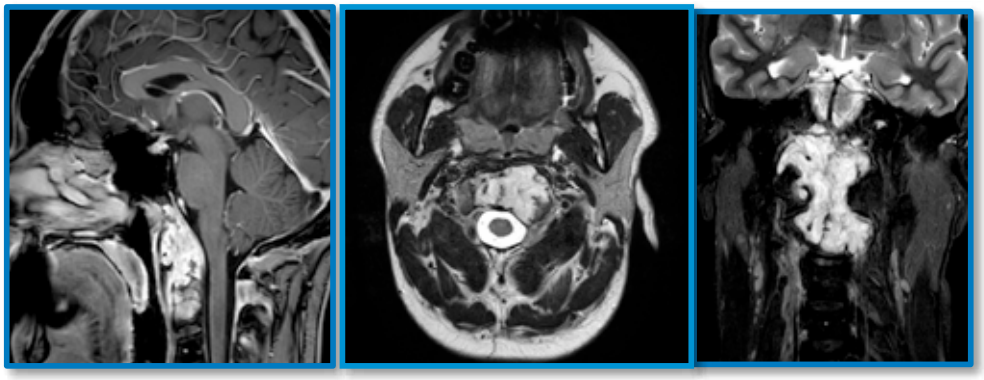
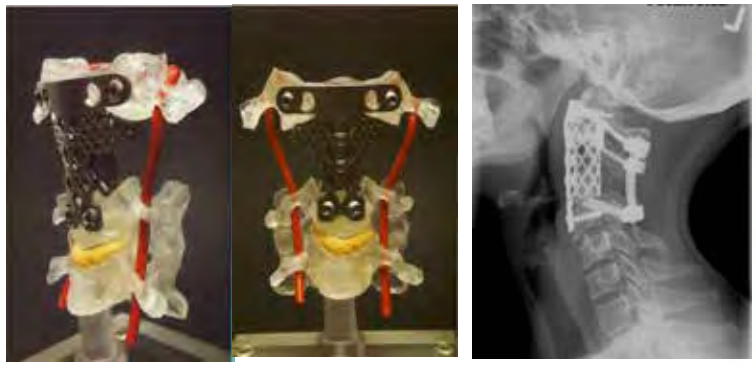
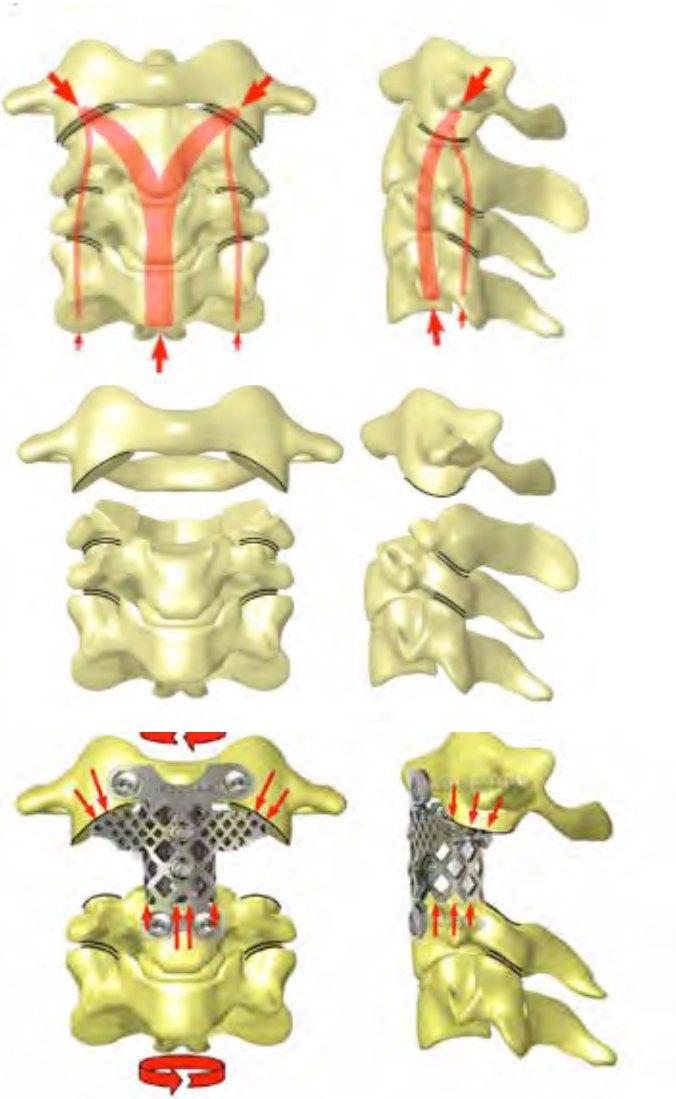
Ziele der Operation

- Frühe Mobilisation
- Weniger Schmerzen
  - Durch mehr Stabilität
  - Neurodekompression
  - Verbessertes Alignement
- Bessere Funktion
  - Schonung beweglicher Segmente

Biomechanik KZÜ







Eur Spine J (2007) 16:1695–1700
DOI 10.1007/s00586-007-0435-6

ORIGINAL ARTICLE

C2 prosthesis: anterior upper cervical fixation device to reconstruct the second cervical vertebra

Dezső Jeszenszky · Tamás Fülöp Fekete · Robert Melcher · Jürgen Harms

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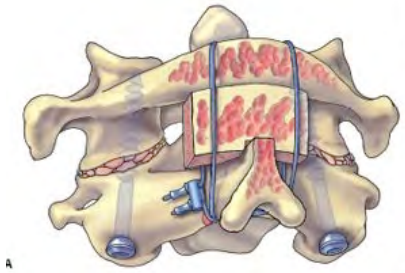
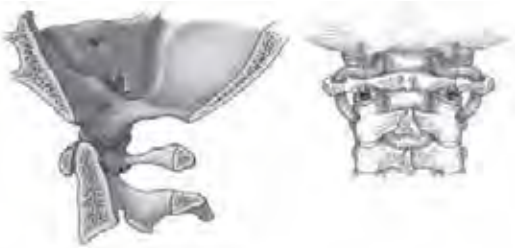
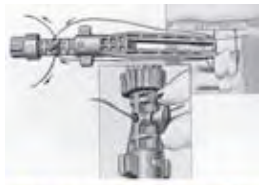
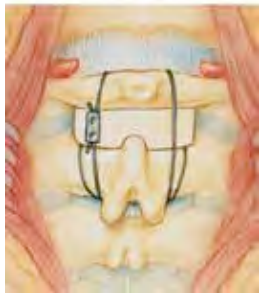
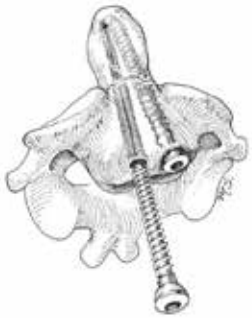
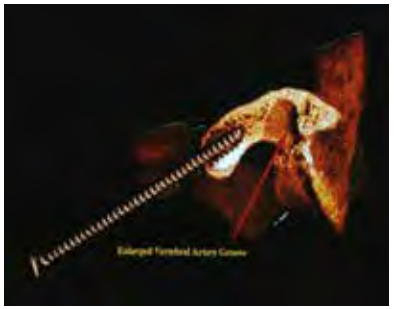
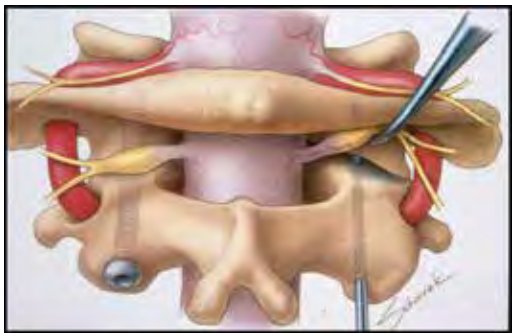
Kraniovertebrale / atlantoaxiale **Fixation**

- Methoden der CCÜ Fixation
  - Zahlreiche Möglichkeiten





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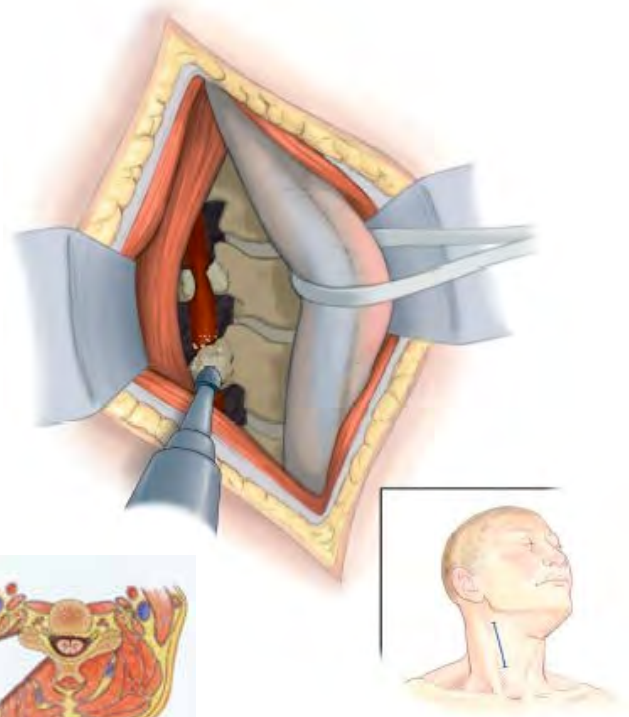
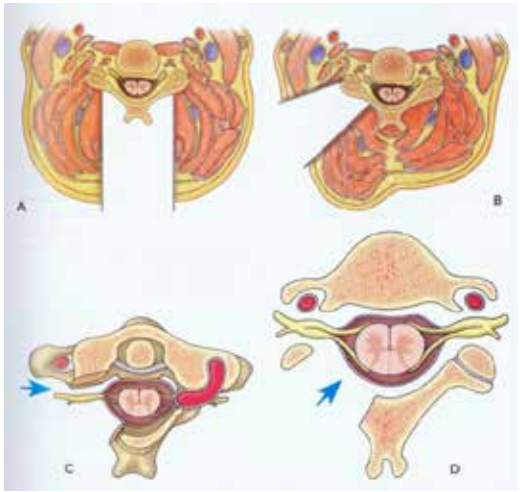
Kraniovertebrale / atlantoaxiale Fixation: Welcher Zugangsweg?

- Ventral
  - anterior hochzervikal
  - anterolateral hochzervikal
  - anterolateral
  - Transoral
  - Transnasal endoskopisch
- Dorsale Mittellinie
  - posterolateral
- Kombiniert





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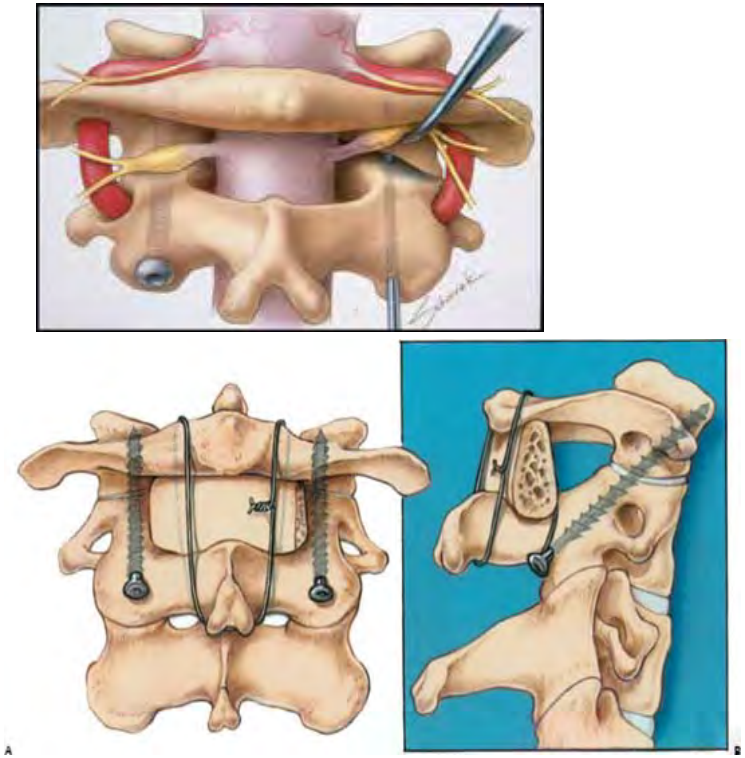
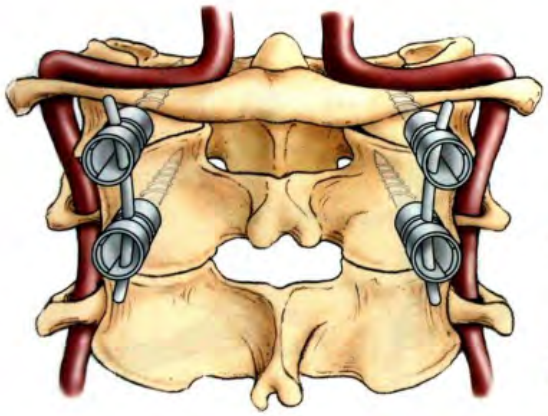
Verankerung C1/C2

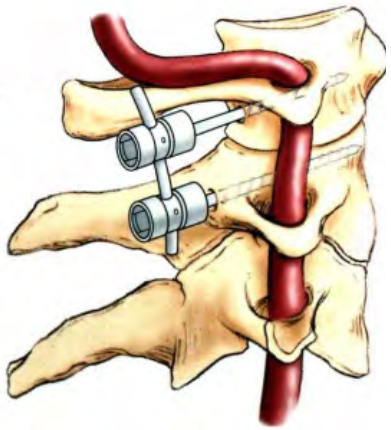
- Transartikuläre Verschraubung (Magerl)

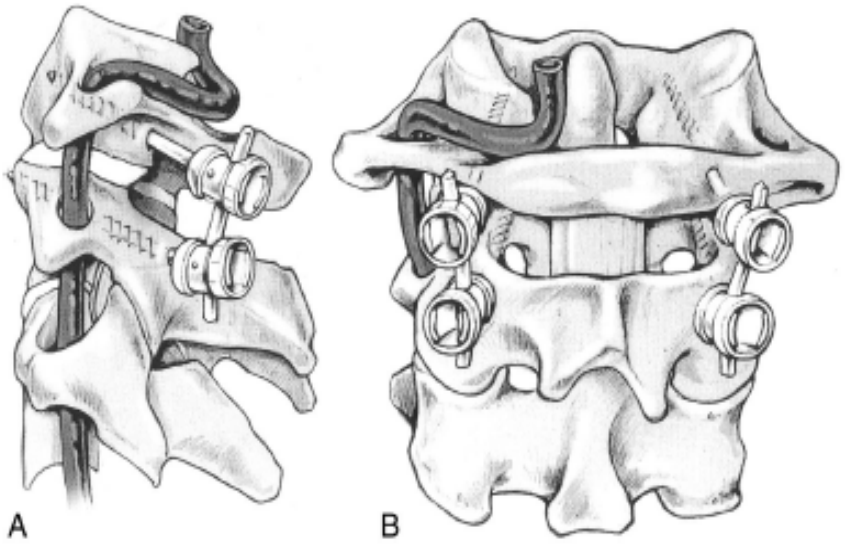


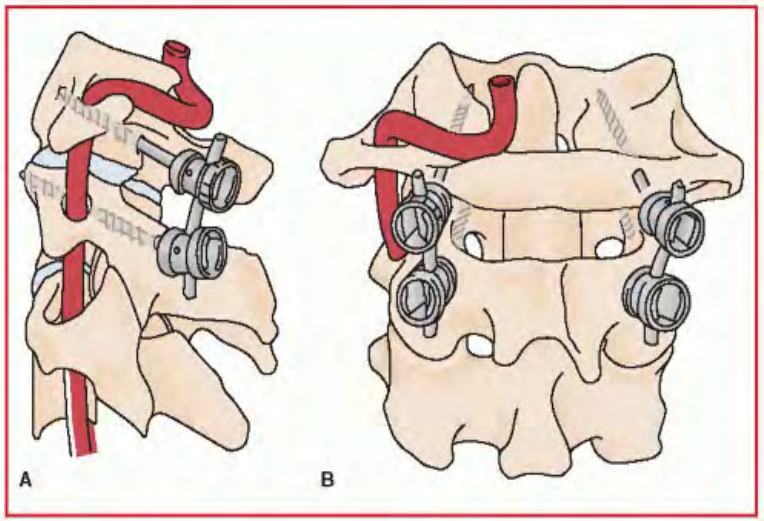
Verankerung C1/C2

- Harms Technik









Melcher, Puttlitz, Kleinstueck, Lotz, Harms, Bradford
Biomechanical Testing of Posterior AtlantoaxialFixation Techniques
SPINE Volume 27, Number 22, pp 2435–2440, 2002

SCHULTHESS KLINIK
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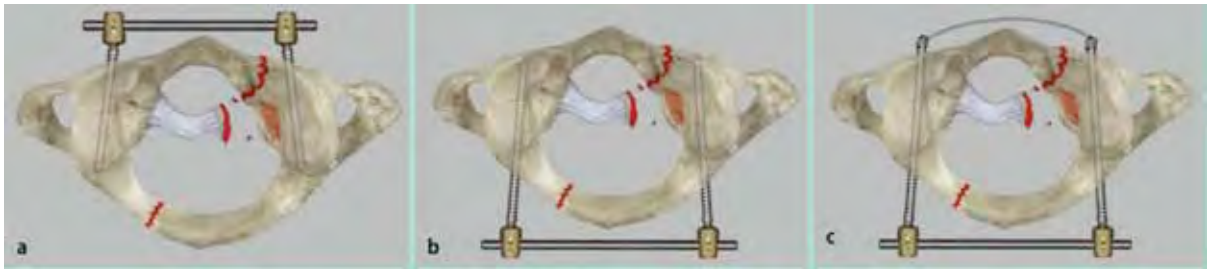
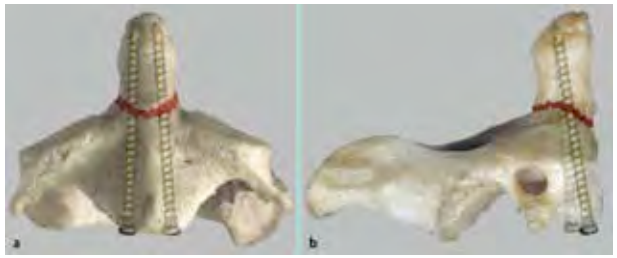
Möglichkeiten für Fusion und Instrumentation von vorne

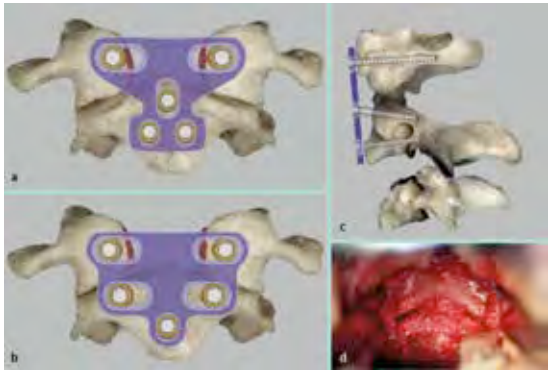
- Atlasosteosynthese



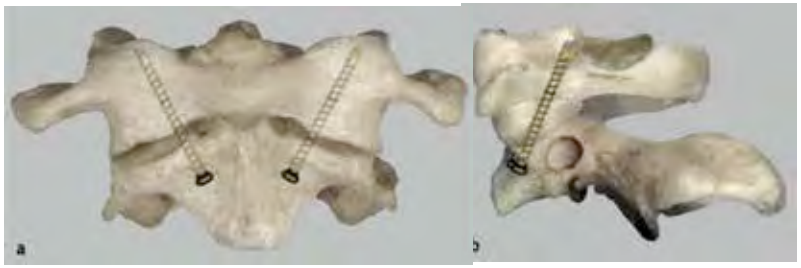
- Densosteosynthese



- Ventrale Plattenstabilsierung



- Ventrale transartikuläre Verschraubung



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SPINE CENTER

Fallvorstellung(Typische)
C1-C2 Fusion bei Osteochondrose rechts

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SPINE CENTER

Fallvorstellung(Typische)
C1-C2 Fusion bei Osteochondrose rechts

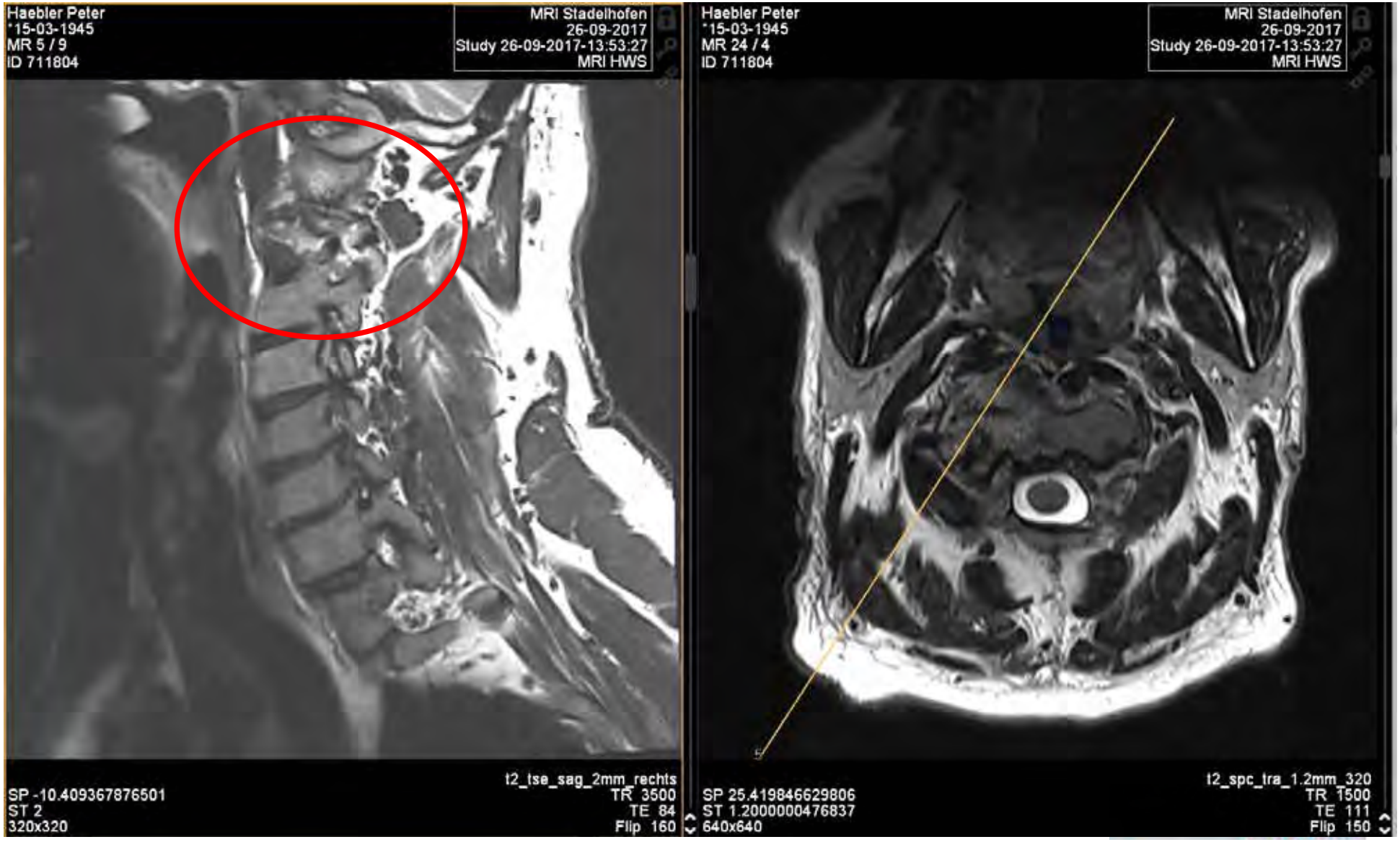
- Patient: 72J, männlich
- Nebendiagnosen:
  - Hypertone Herzkrankheit
  - Sigmadivertikulose
  - Prostatahyperplasie, Operation ca. 2002
  - Diskushernie L3/4 links, konservativ behandelt
  - Epidurale Arachnoidalzyste Th12 bis L2 links (Zufallsbefund)
- Anamnese: Pt. leidet seit über zwei Jahren unter Nackenbeschwerden sowie unter Ausstrahlungen in die Stirnregion rechts. Infiltrationen brachten vorübergehend eine Linderung der Beschwerden, die letzte Infiltration führte zu einer Verstärkung. Die Drehbeweglichkeit des Kopfes ist deutlich eingeschränkt.
- Verspannung der Nackenmuskulatur. Kopfrotation nach rechts 40°, links 50°. Reklination 40°, Kinn-Jugulum-Abstand 4 cm. Drehbewegungen nach rechts werden als sehr schmerzhaft angeben. Sensibilität und Kraft in den Armen regelrecht

2015

SPINE CENTER

2017

(rechts)


Haebler Peter
*15-03-1945
MR 5 / 9
ID 711804
MRI Stadelhofen
26-09-2017
Study 26-09-2017-13:53:27
MRI HWS
t2_tse_sag_2mm_rechts
TR 3500
TE 84
Flip 160
SP -10.409367876501
ST 2
320x320
Haebler Peter
*15-03-1945
MR 24 / 4
ID 711804
MRI Stadelhofen
26-09-2017
Study 26-09-2017-13:53:27
MRI HWS
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TE 111
Flip 150
SP 25.419846629806
ST 1.2000000476837
640x640

2017

(links)


Haebler Peter
*15-03-1945
MR 4 / 10
ID 711804
MRI Stadelhofen
26-09-2017
Study 26-09-2017-13:53:27
MRI HWS
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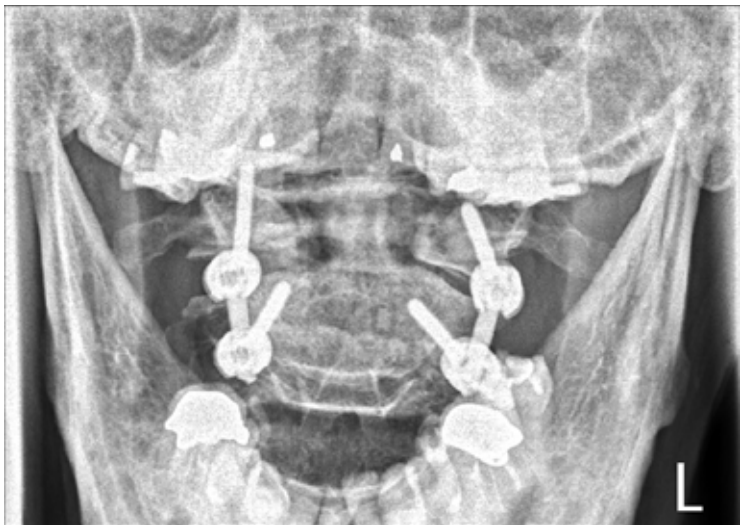
Haebler Peter
*15-03-1945
MR 24 / 4
ID 711804
MRI Stadelhofen
26-09-2017
Study 26-09-2017-13:53:27
MRI HWS
t2_spc_tra_1.2mm_320
TR 1500
TE 111
Flip 150
SP 25.419846629806
ST 1.2000000476837
640x640

Operation

- C1-C2 dorsale spondylodese mit Schrauben und Stab nach Harms
- Wiederherstellung des Koronaren Profils mit autologen Knochenimplantat (Bikortikale Becken Spanentnahme).



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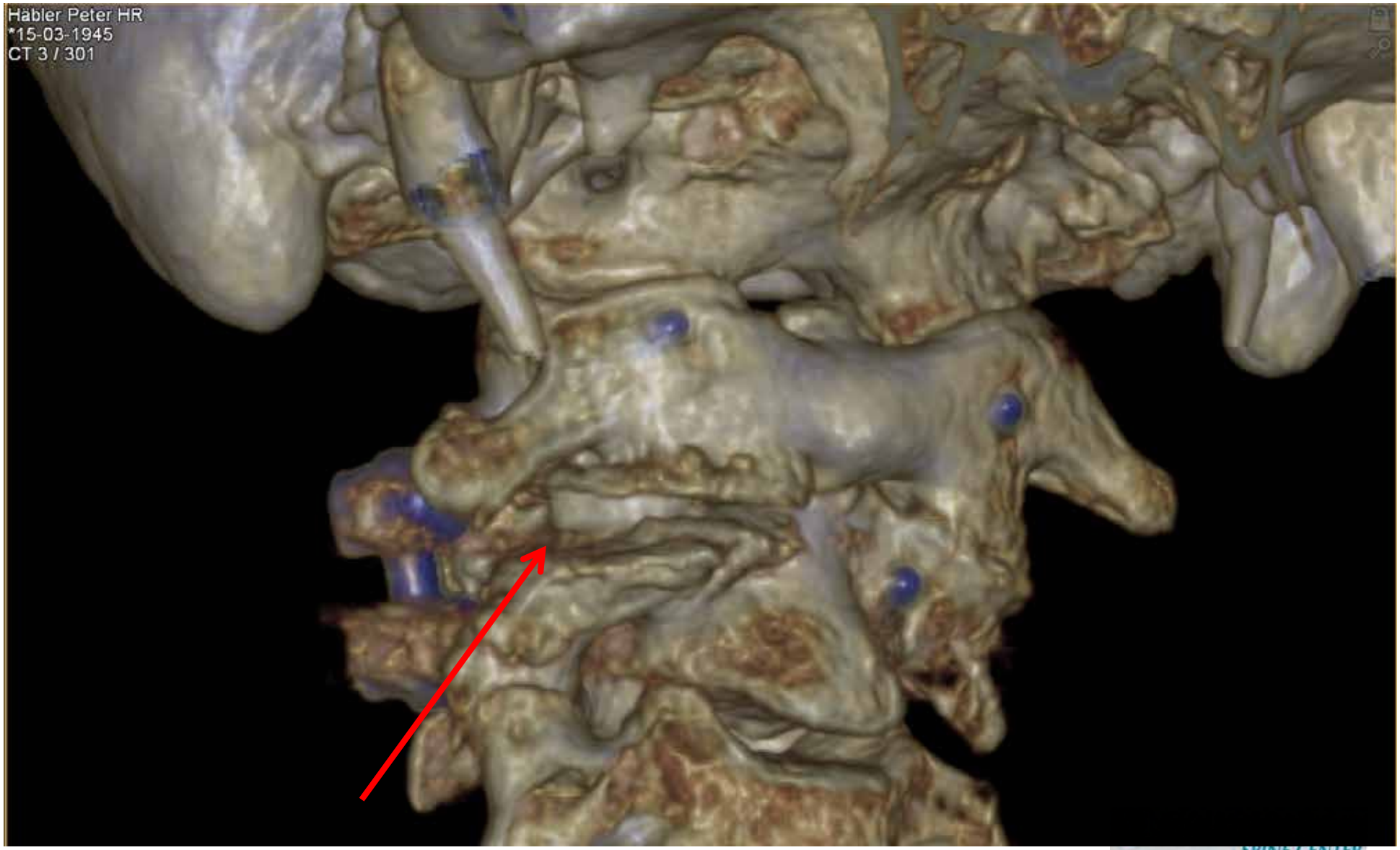
3D CT Rekonstruktion



Implantat Position auf CT

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Fallvorstellung (SV, 77 J, weiblich)

Spinalkanalstenose durch Calcium-Pyrophopsphat-Kristalle mit Kompression in Höhe Dens rechtsbetont
Hochgradige Myelopathie Zeichen

Anamnese

- Koordinationsstörung der rechten Hand seit November 2017
- Missempfindungen linker Fuss
- Zunehmende Gangunsicherheit

Klinik 28.11.201

- Sensibler Querschnitt sub Th4
- Pronation im Armhalteversuch rechts
- Knie-Hacken-Versuch rechts normal, links dysmetrisch
- Ellbeugen-Flexion M5-, -extension M5. Handgelenksextension M5, -flexion M5- Fingerspreizen M5. Daumenabduktion M5-
- MER seitengleich BSR, TSR. PSR; ASR bds. lebhaft nicht gesteigert
- Finger-Nase-Versuch und Finger-Finger-Versuch rechts dysmetrisch Bradydiadochokinese rechts

Elektrophysiologie 28.11.2017

- MEP zu Armen und Beinen verlängert

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Röntgen 28.11.2018

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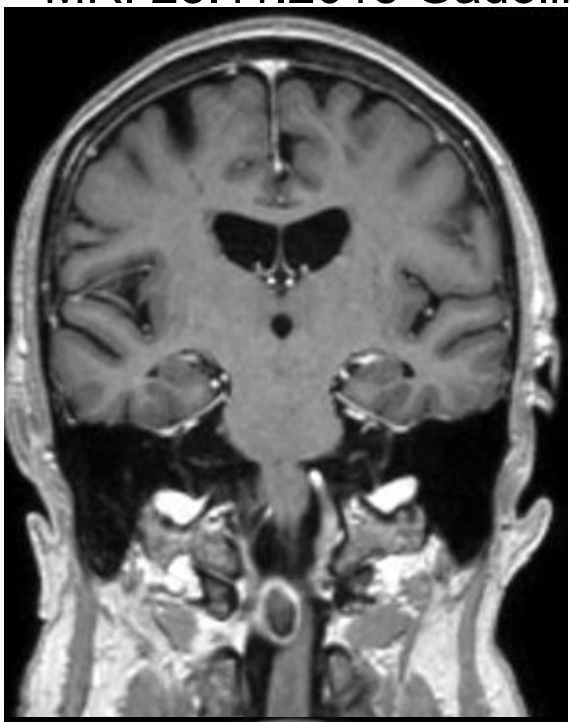
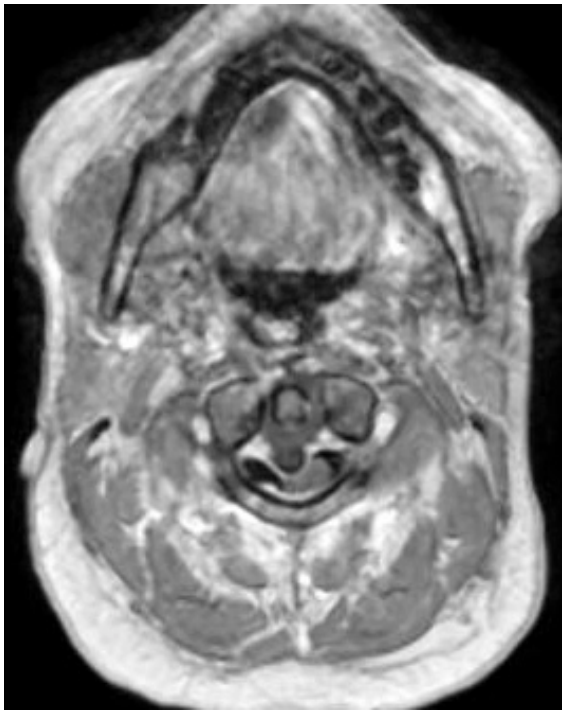
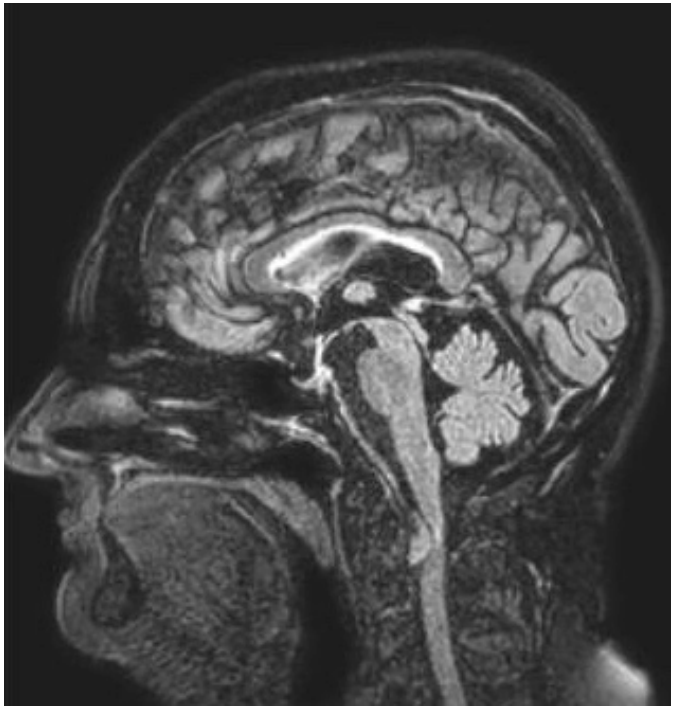
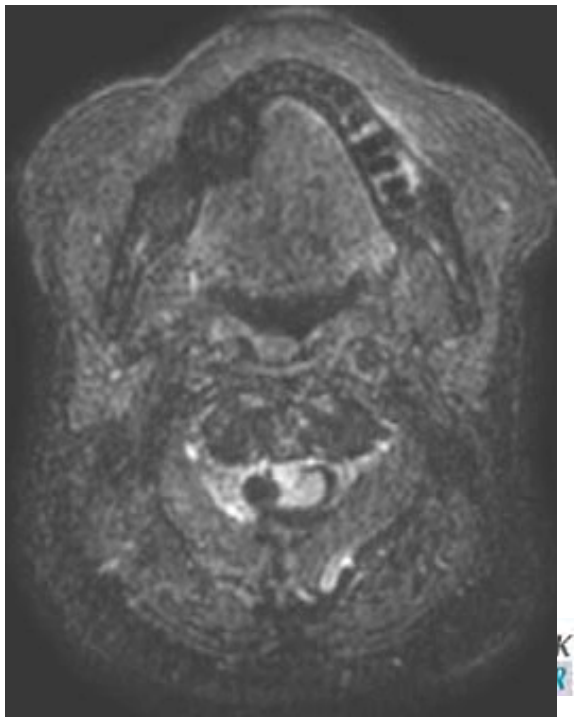
MRI 23.11.2018 Gadolinium

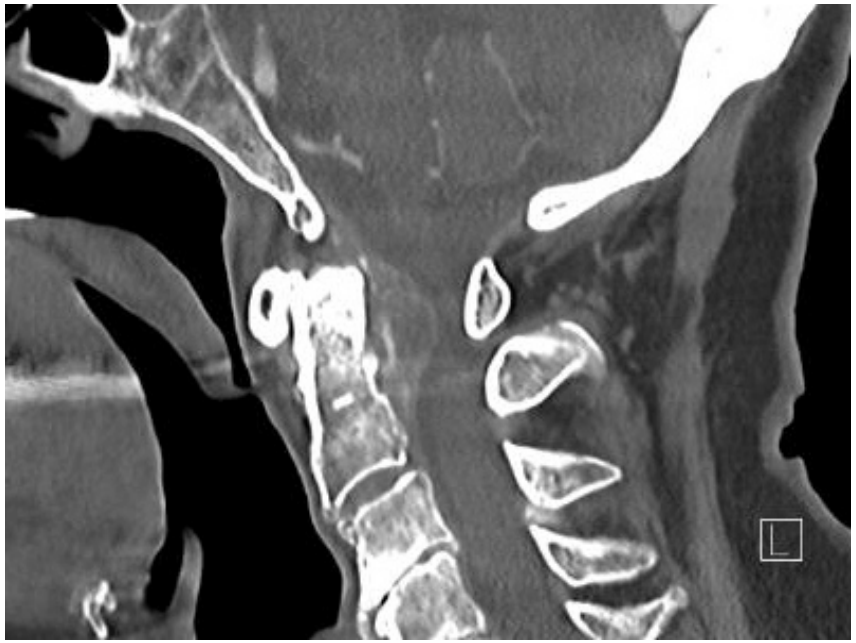




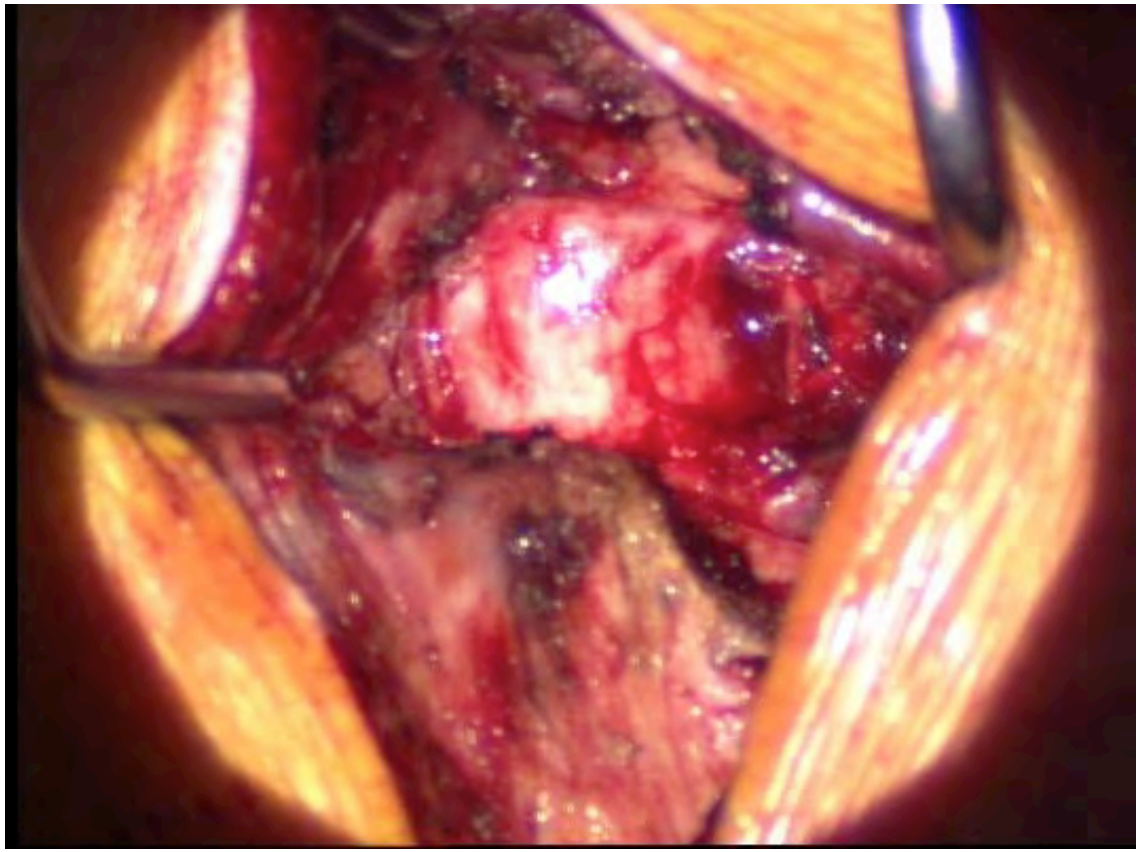




CT 24.11.2017

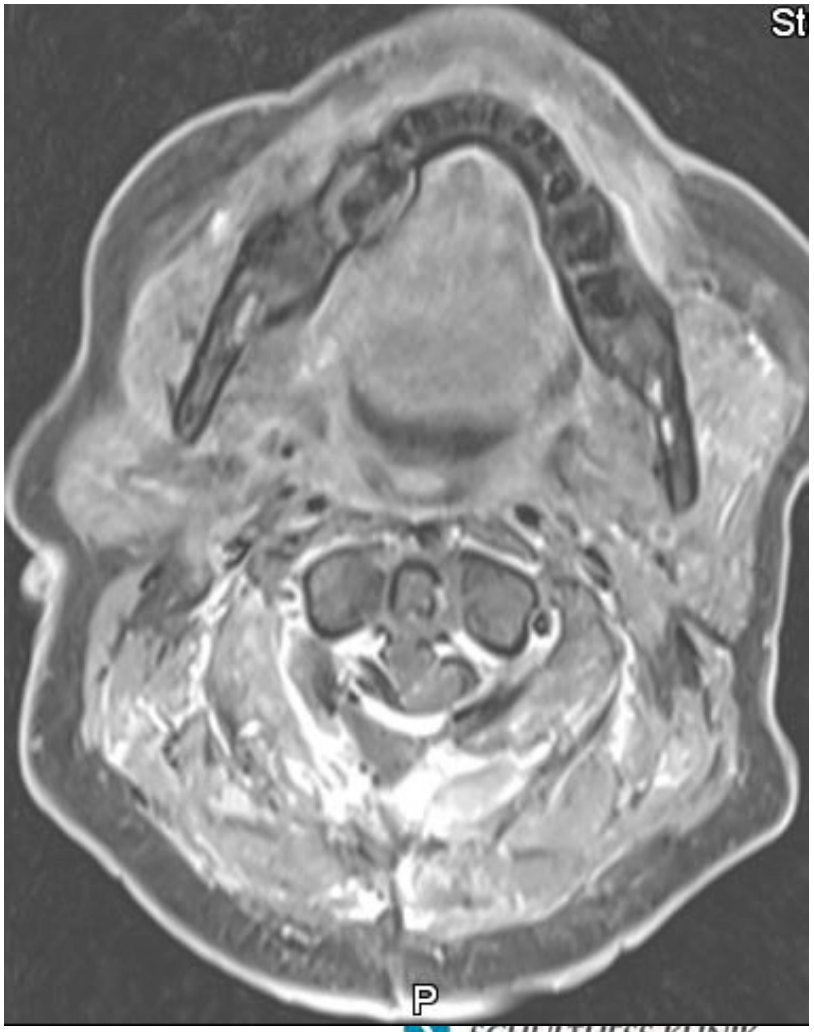


Operation 29.11.2017 Dorsale mikrochirurgische Dekompression



Postoperativ nur minime Besserung der neurologischen Defizite

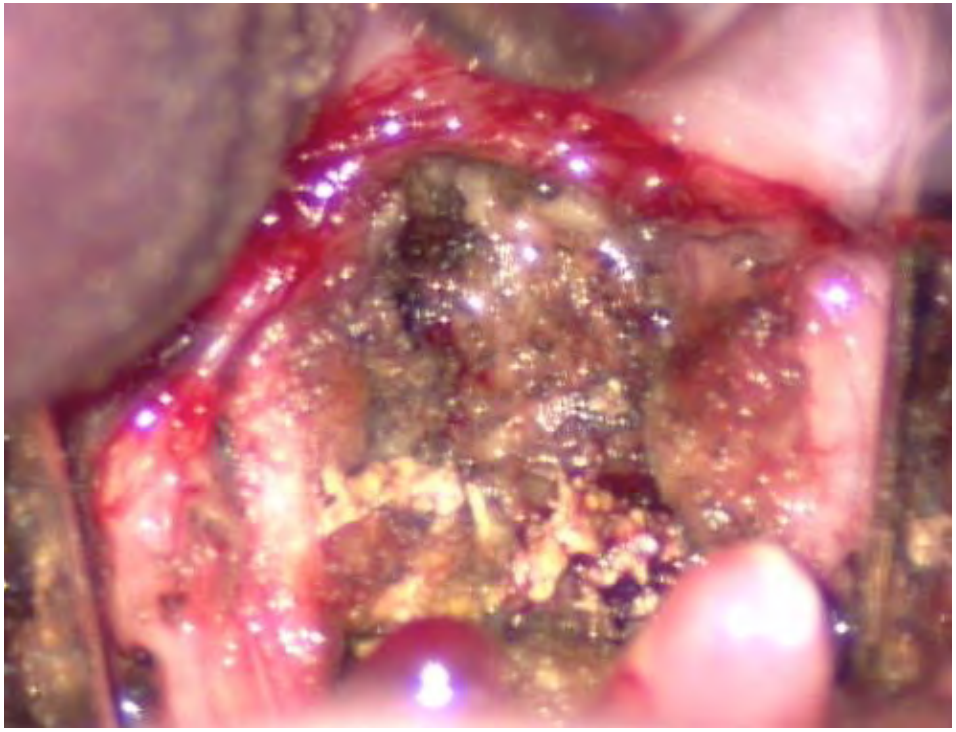
MRI 04.12.2017 : persistierende Stenose

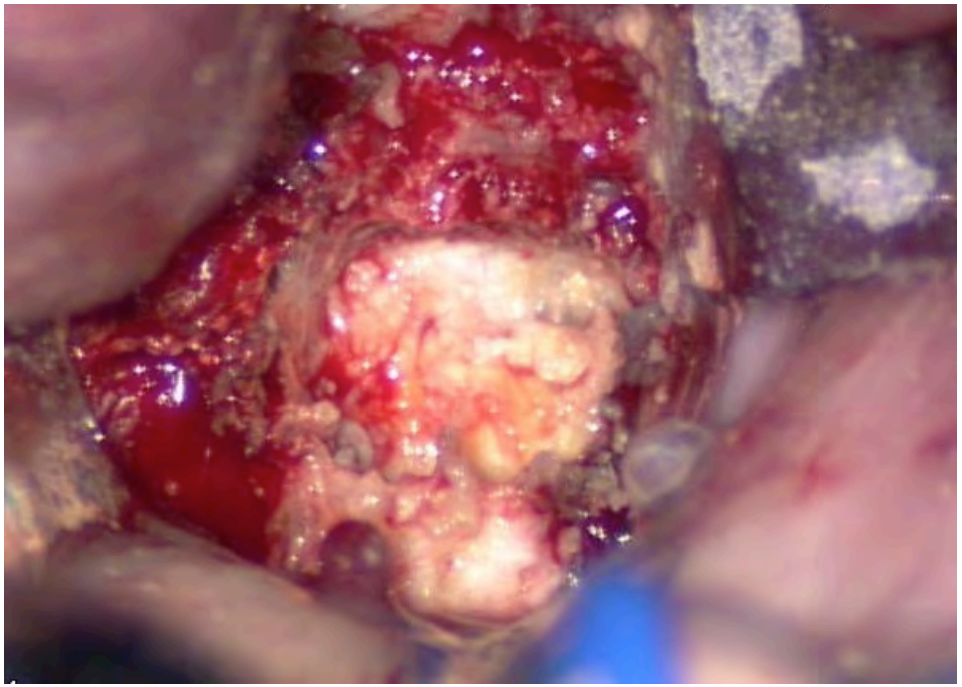


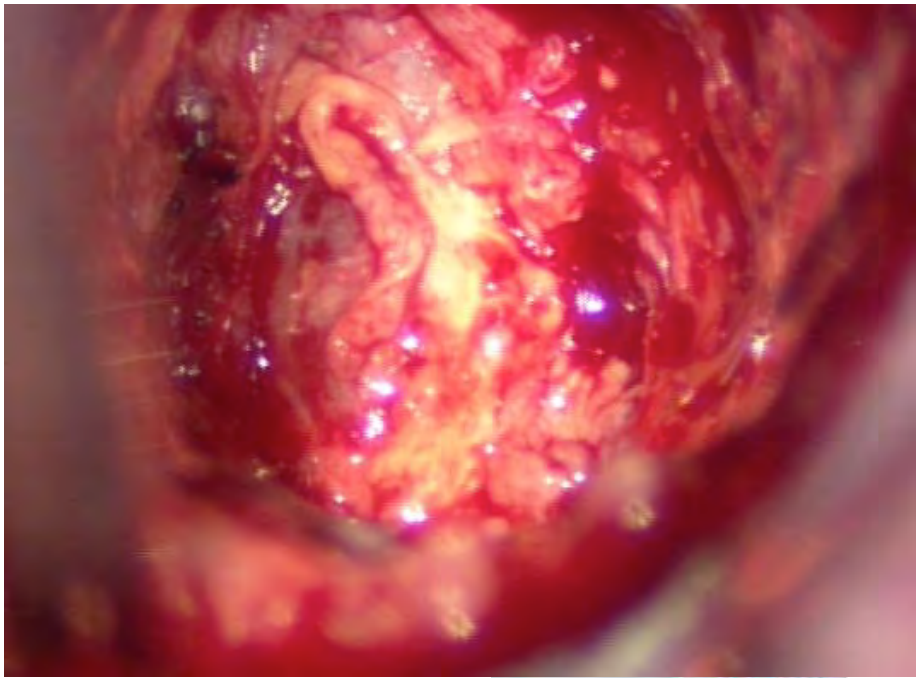
Operation 05.12.2018

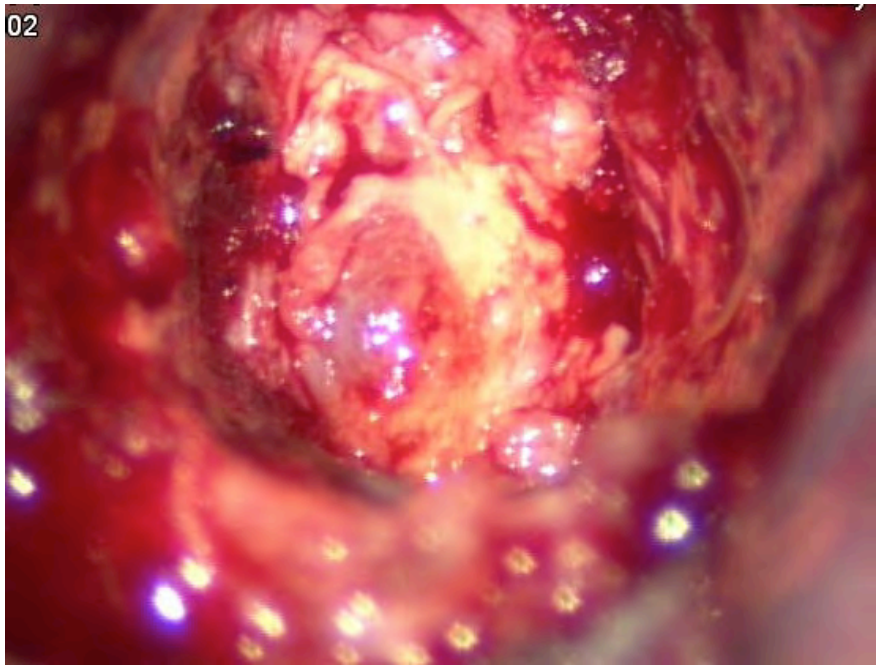
- Dorsale C1/2-Stabilisation nach Harms

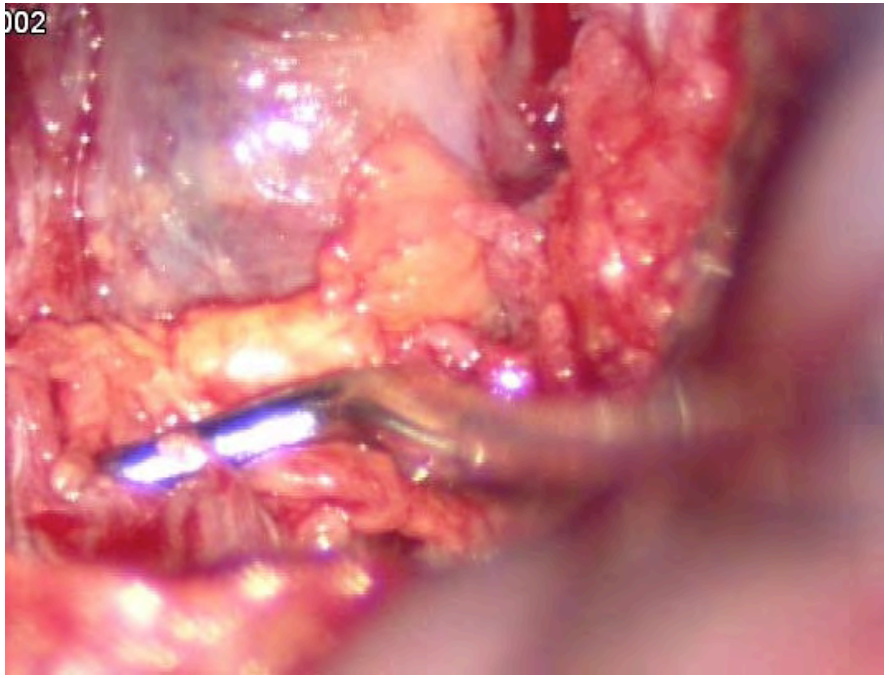
- Transorale Dens-Resektion und Dekompression in Höhe C1/2

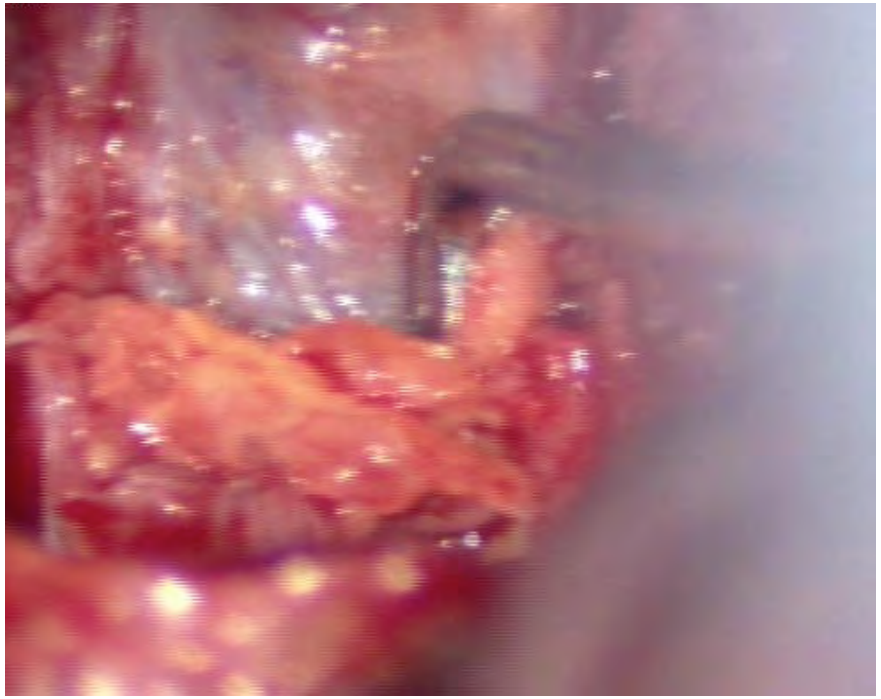


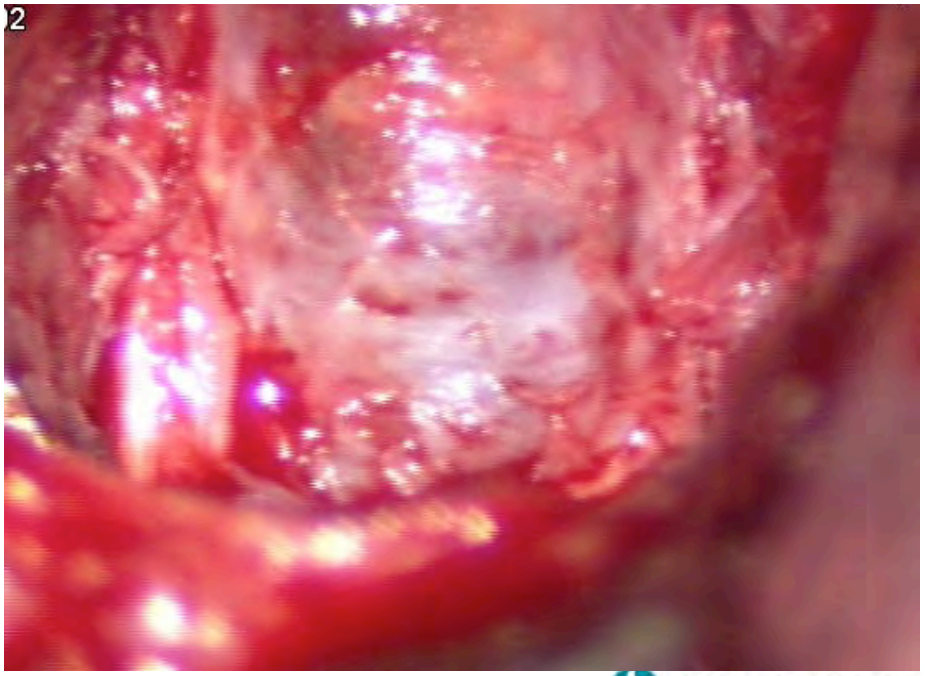












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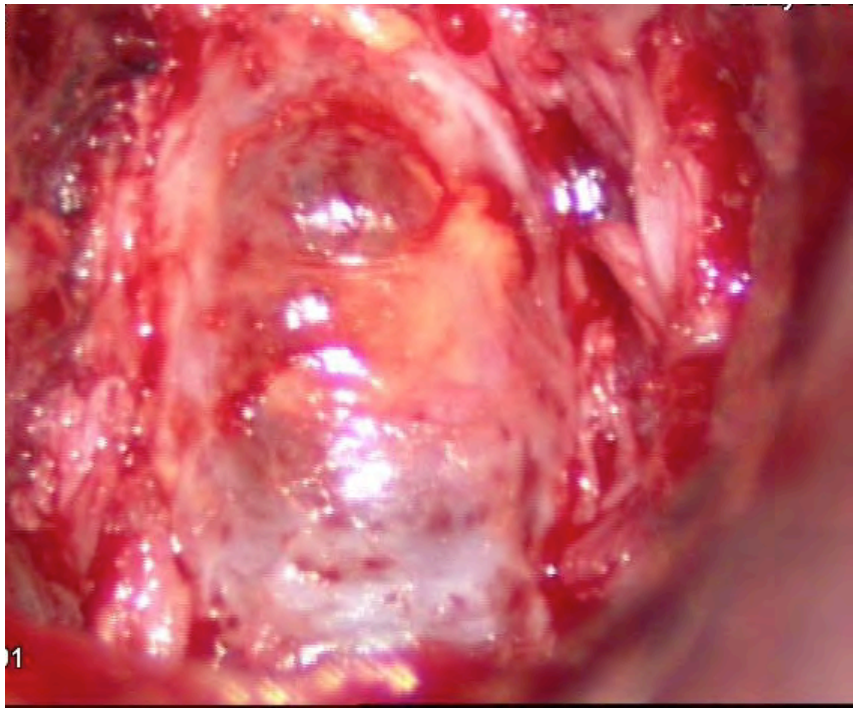

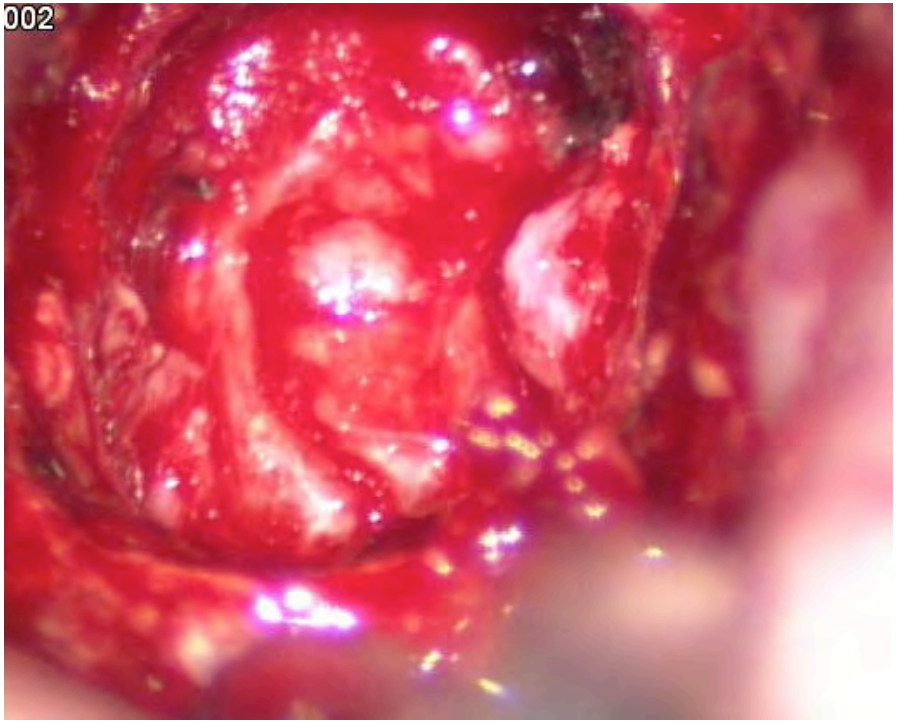
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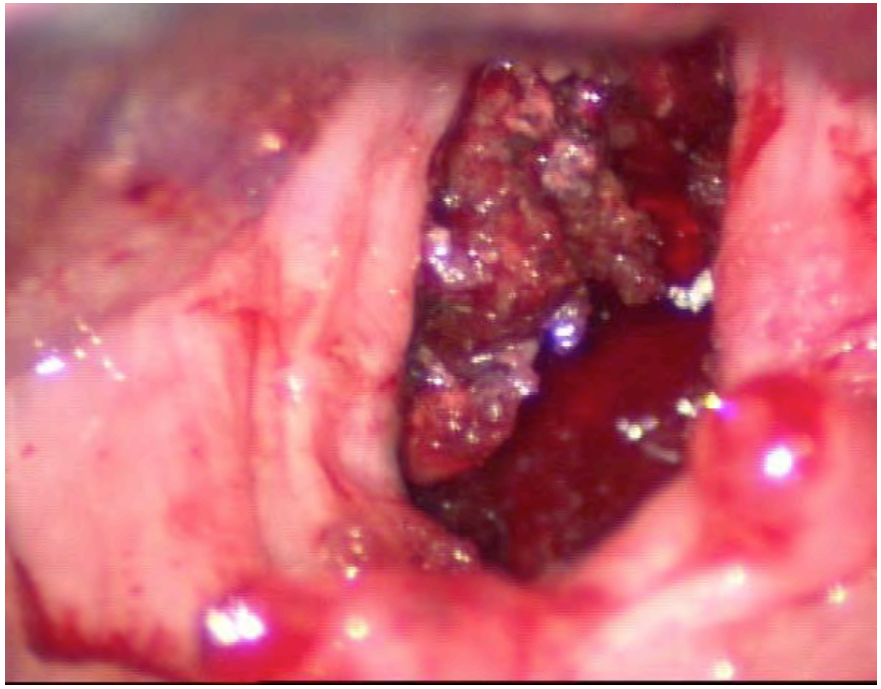

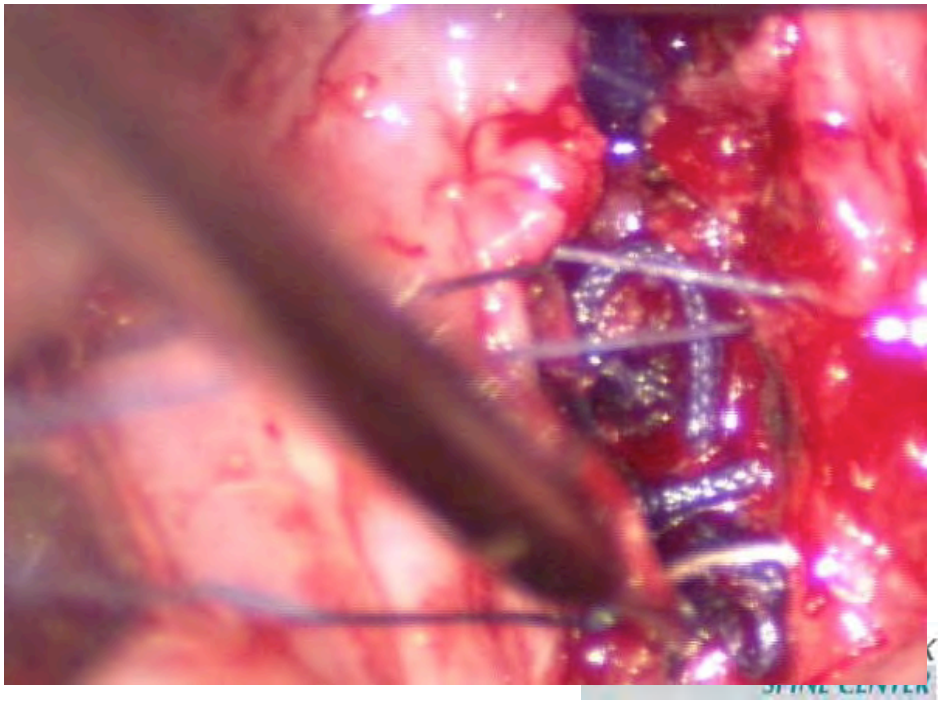

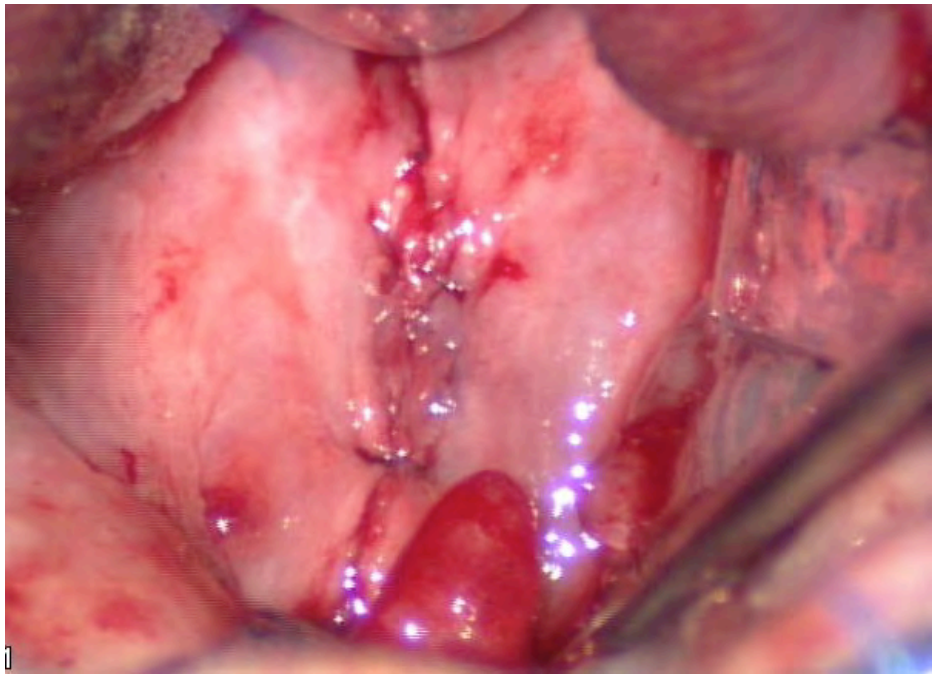

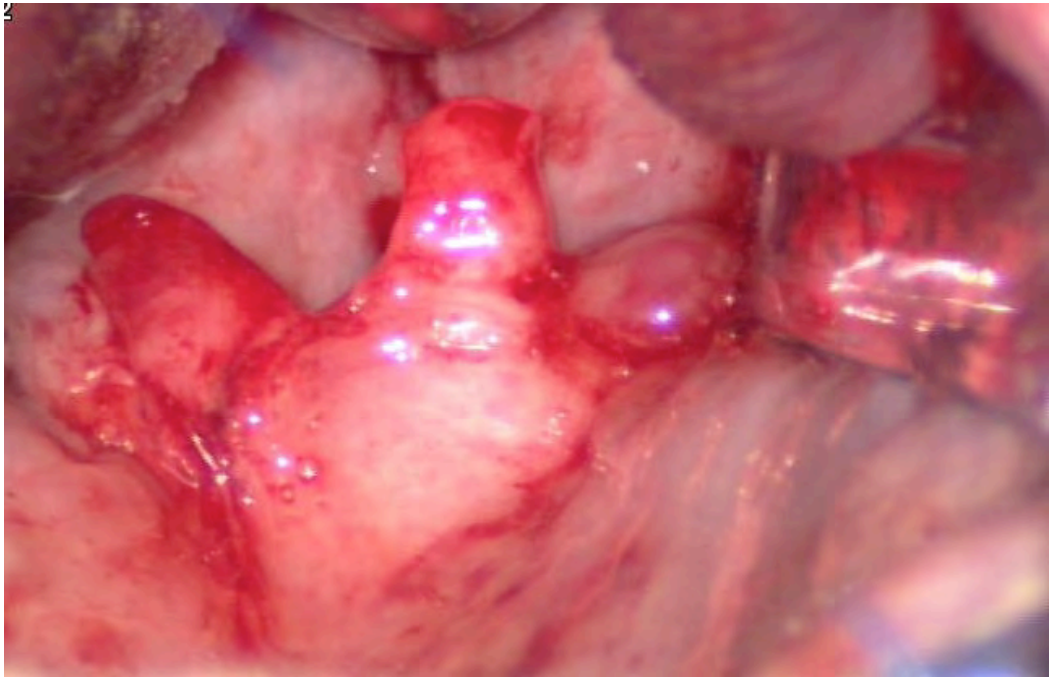

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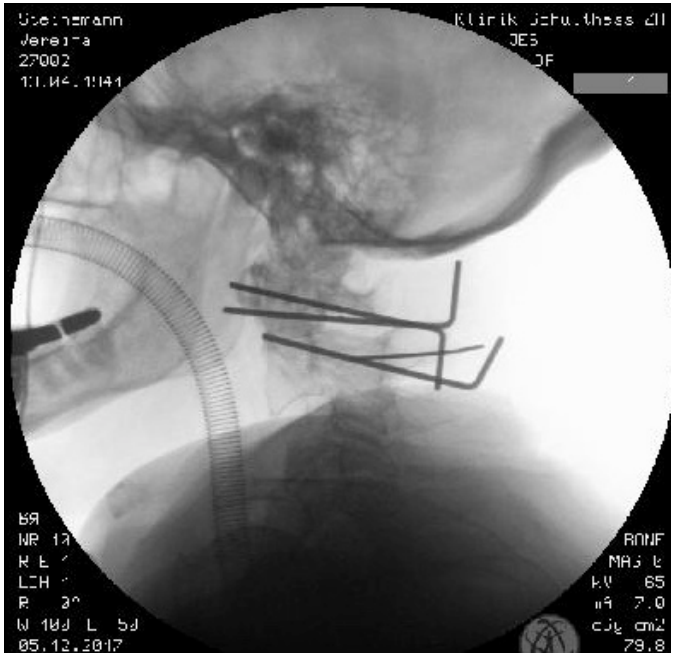
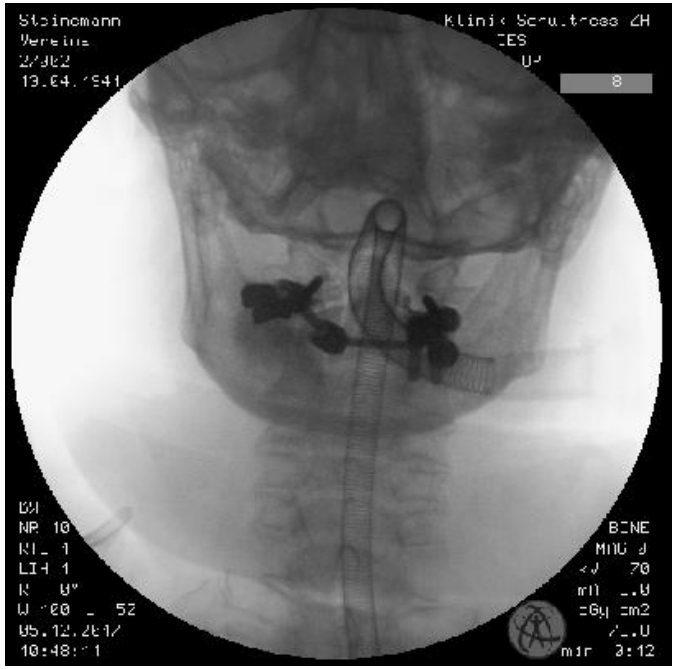
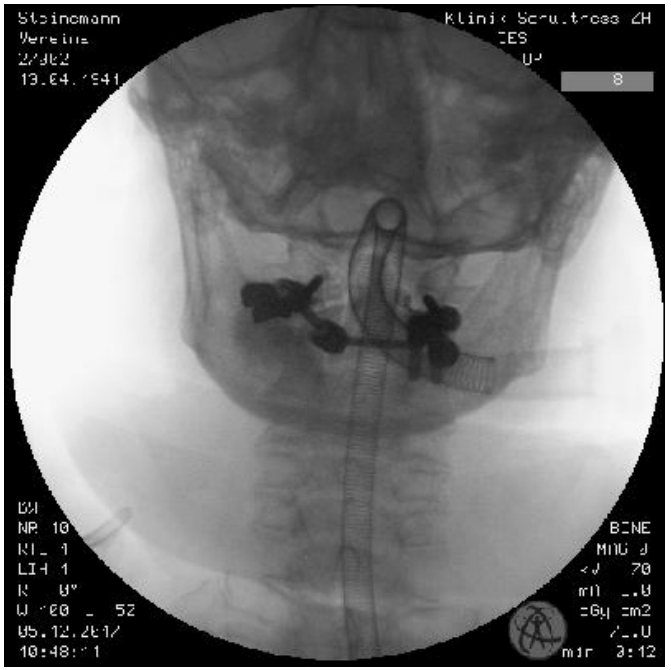
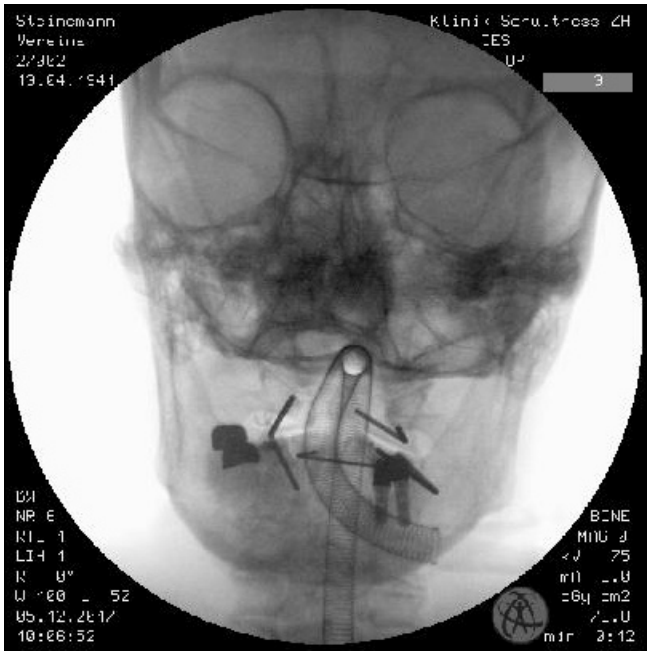
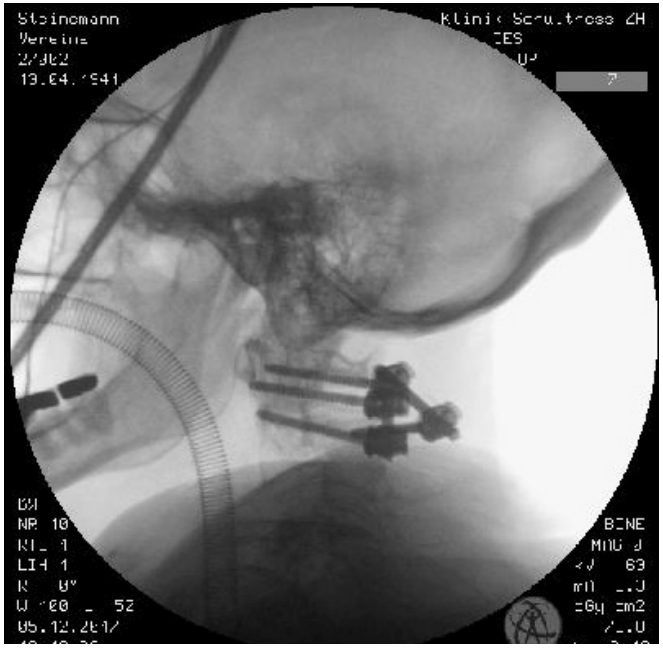
05.12.2018 intraoperativ

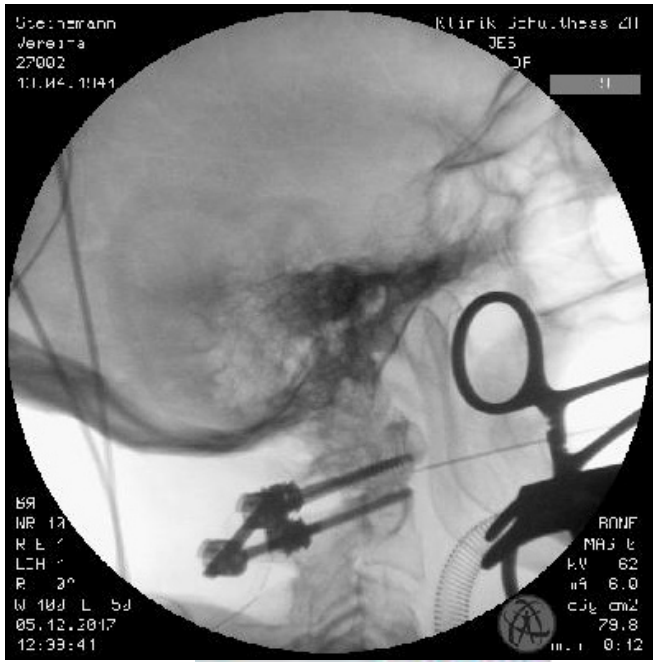




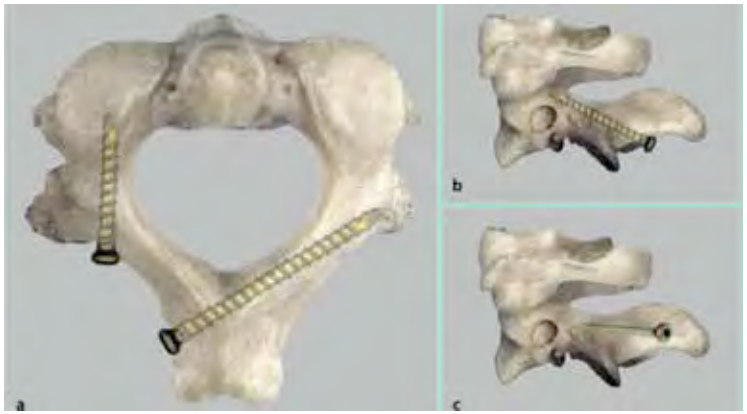


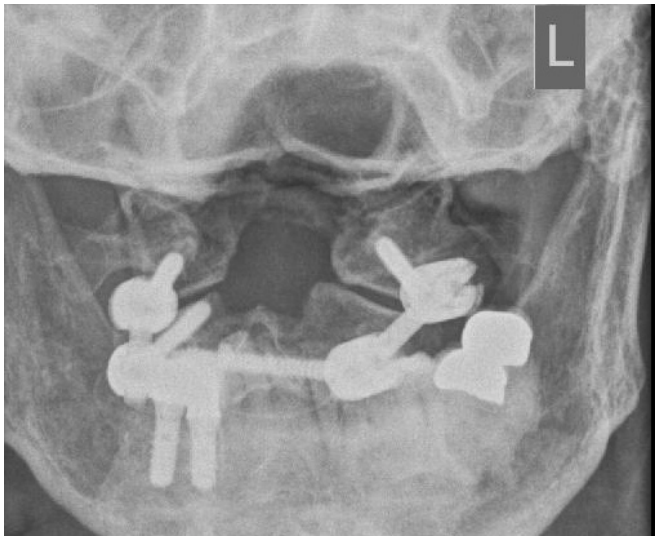






Röntgen 12.12.2017





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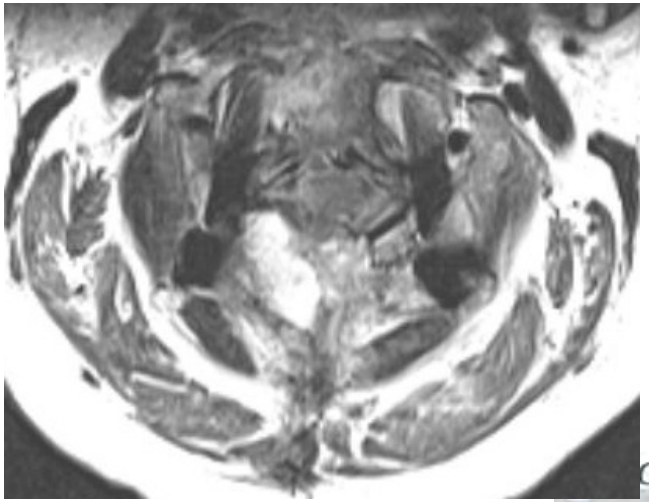
MRI 12.12.2017



Befund Juni 2018 (6Monate postoperativ)

- Keine Armschwäche mehr
- Keine Geherschwernis mehr
- Sport (Golf) wieder begonnen

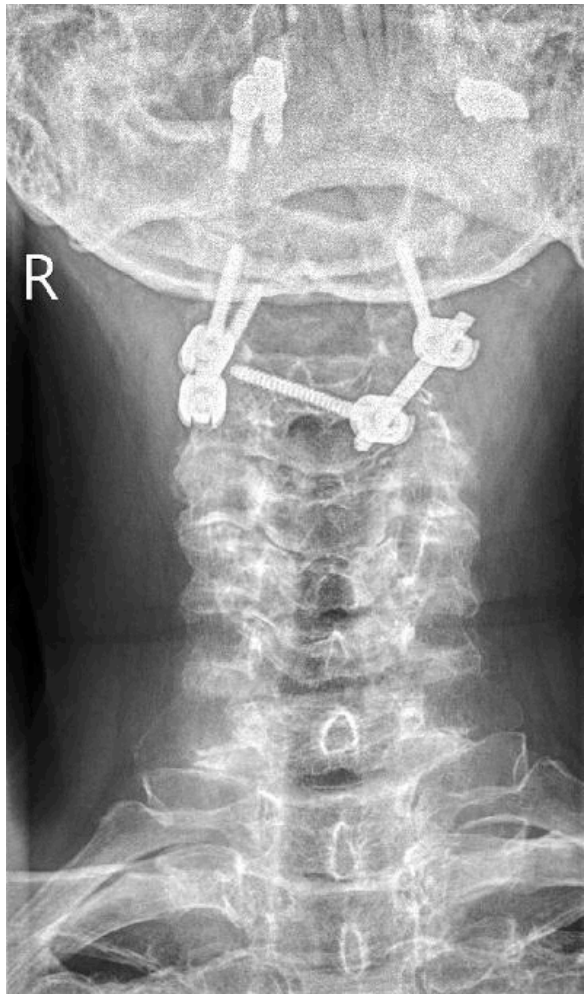
Klinik Juni 2018

- Keine manifesten Paresen
- Berührungssensibilität intakt
- Arme: kein Absinken, keine Pronation im Halteversuch
- Fingernaseversuch beidseits metrisch
- Bradydiadochokinese rechtsbetont der Hände
- Knie-Hackenversuch bds. normal

Elektrophysiologie 04.07.2018

- Normalisierte MEP zu Armen und Beinen

Röntgen 04.07.2018



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MRI 04.07.2018 (6 Monate postoperativ)

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Wirbelsäulenchirurgischen Eingriffe der oberen Halswirbelsäule

- Indikation allgemein
- Indikation bei degenerativen Veränderungen
- Operative Möglichkeiten
- **Chancen**

SCHULTHESS KLINIK
SPINE CENTER

Soll man überhaupt operieren?

Eine vergleichende Studie bei RA Patienten mit/ohne Chirurgie der oberen Halswibelsäule

Schmerzreduktion
Weniger Myelopathie
(Neurologie)

} mit Chirurgie

Matsunaga S. et al. Spine 28, 2003

SCHULTHESS KLINIK
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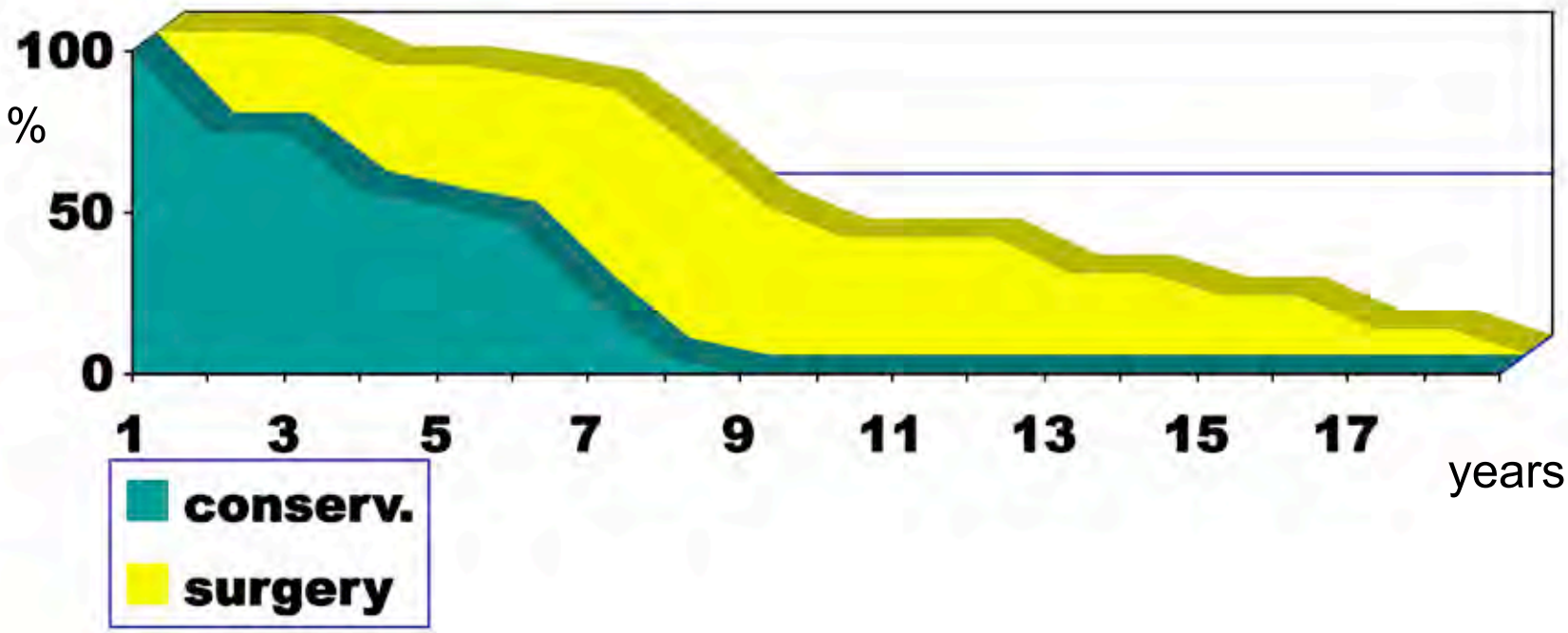
Soll man überhaupt operieren?Überlebensrate



Matsunaga S. et al. Spine 28, 2003

SCHULTHESS KLINIK
SPINE CENTER

Decade-long analysis of atlantoaxial (C1/2) fusion reveals excellent patient-rated outcomes

Kleinstück FS, Fekete TF, Loibl M, Jeszenszky D, Haschtmann D, Mannion AF

SCHULTHESS KLINIK
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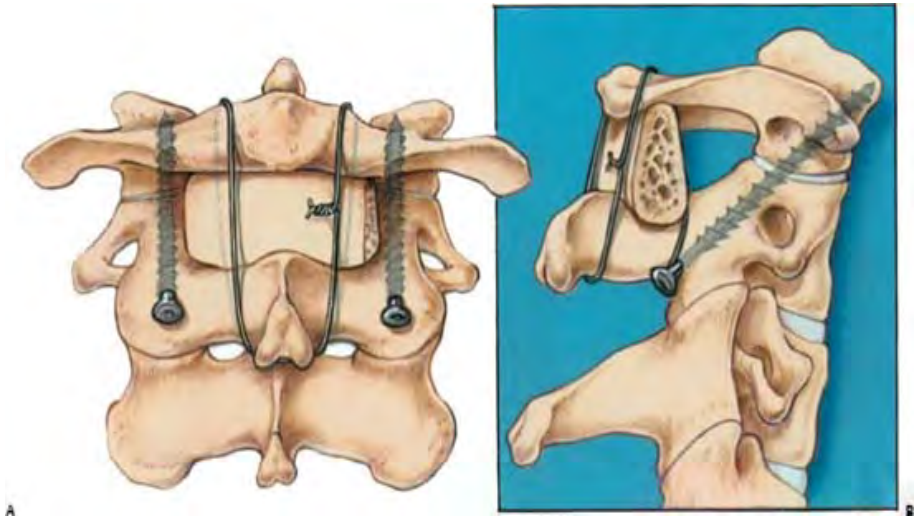
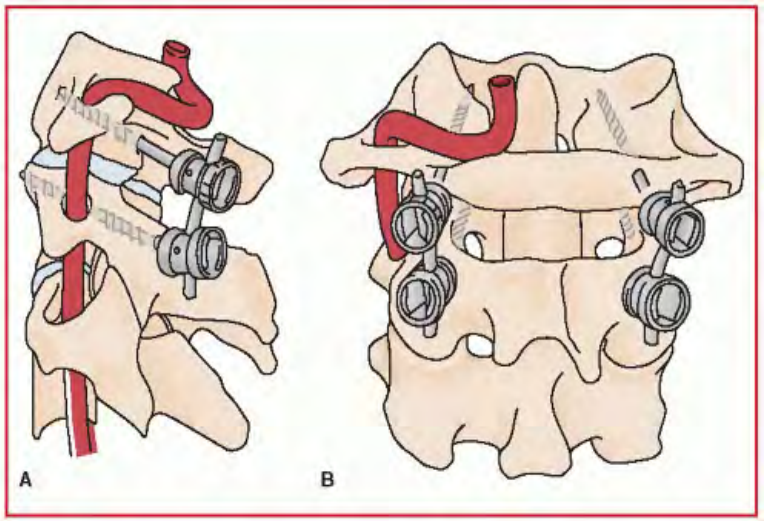
Introduction

- Various surgical techniques for C1/2 fusion
  - Magerl's transarticular screw fixation
  - Harms' direct instrumentation





Introduction

- Common indications
  - degenerative osteoarthritis (OA)
  - rheumatoid arthritis (RA)

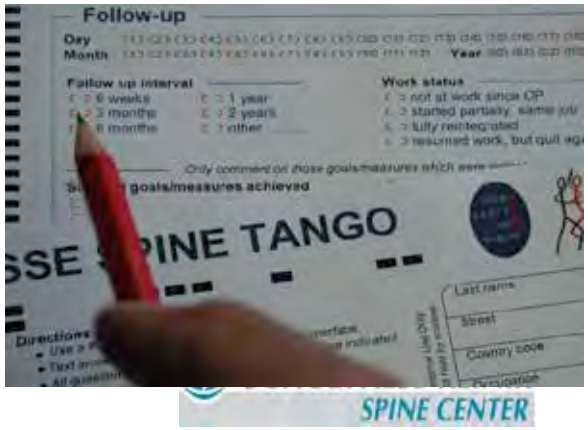
- Few, small studies have evaluated outcomes after C1/2 fusion

Aim of the study

- Investigate patient-rated outcome in a large series of consecutive patients undergoing isolated C1/2 fusion

Methods

- Prospectively collected data (2005-2016) from our Spine outcomes database, collected within the framework of EUROSPINE's Spine Tango Registry.
- 126 patients, isolated C1/2 fusion at least 1 y ago
  - 34 (27%) men, 92 (73%) women
  - mean (SD) age 67±19 y
- Type of fusion
  - 61% Magerl
  - 39% Harms
- Underlying pathology
  - N=83 (66%) OA
  - N=20 (16%) RA
  - N=15 (12%) fracture
  - N= 8 (6%) other

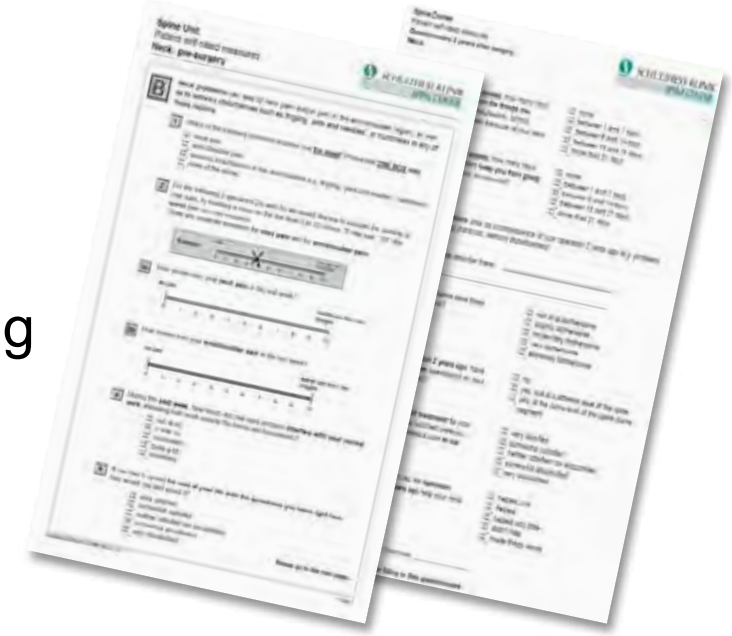


Methods

- Core Outcome Measures Index (COMI) completed pre-operatively and 12 months postoperatively

Multi-dimensional index 0-10

- neck pain
- arm pain
- function
- symptom-specific well-being
- general quality-of-life
- work and social disability



12 mo postop

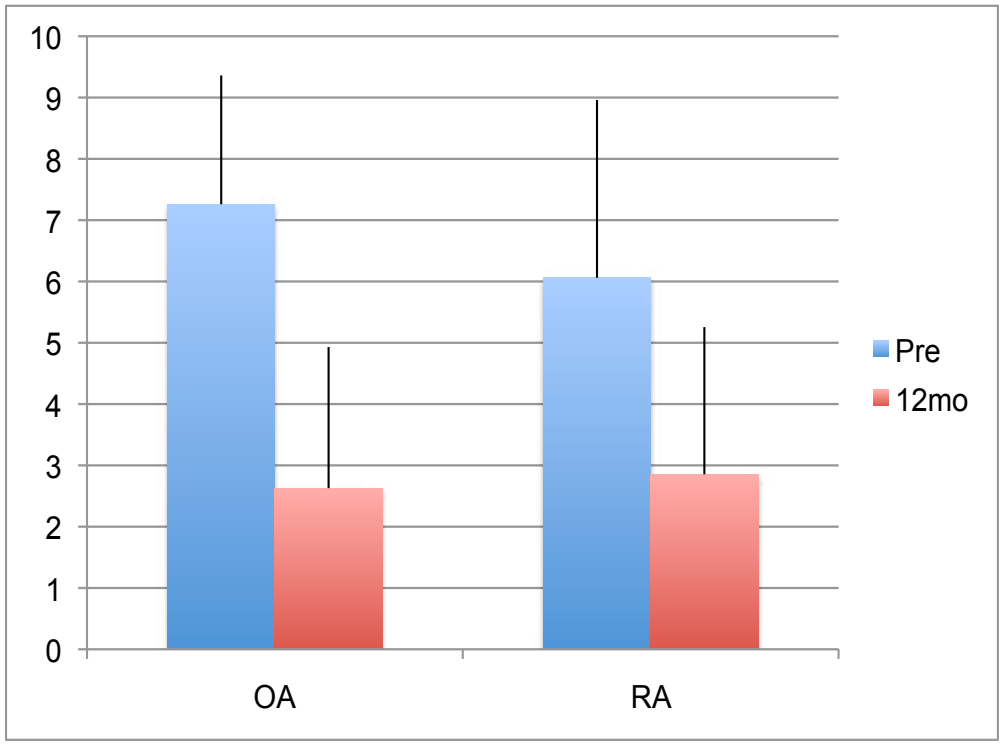
- Global treatment outcome
- Satisfaction with care
- Satisfaction with current symptom state
- Self-rated complications
- Reoperations

SCHULTHESS KLINIK
SPINE CENTER

Results

- N=119/126 (94%) patients completed 12 mo FU
- COMI showed a significant reduction from preop to 12 mo FU, from 6.9±2.4 to 2.7±2.4
- OA patients showed a slightly but significantly greater reduction in COMI than RA patients (p<0.049), owing largely to their worse baseline status.

COMI score

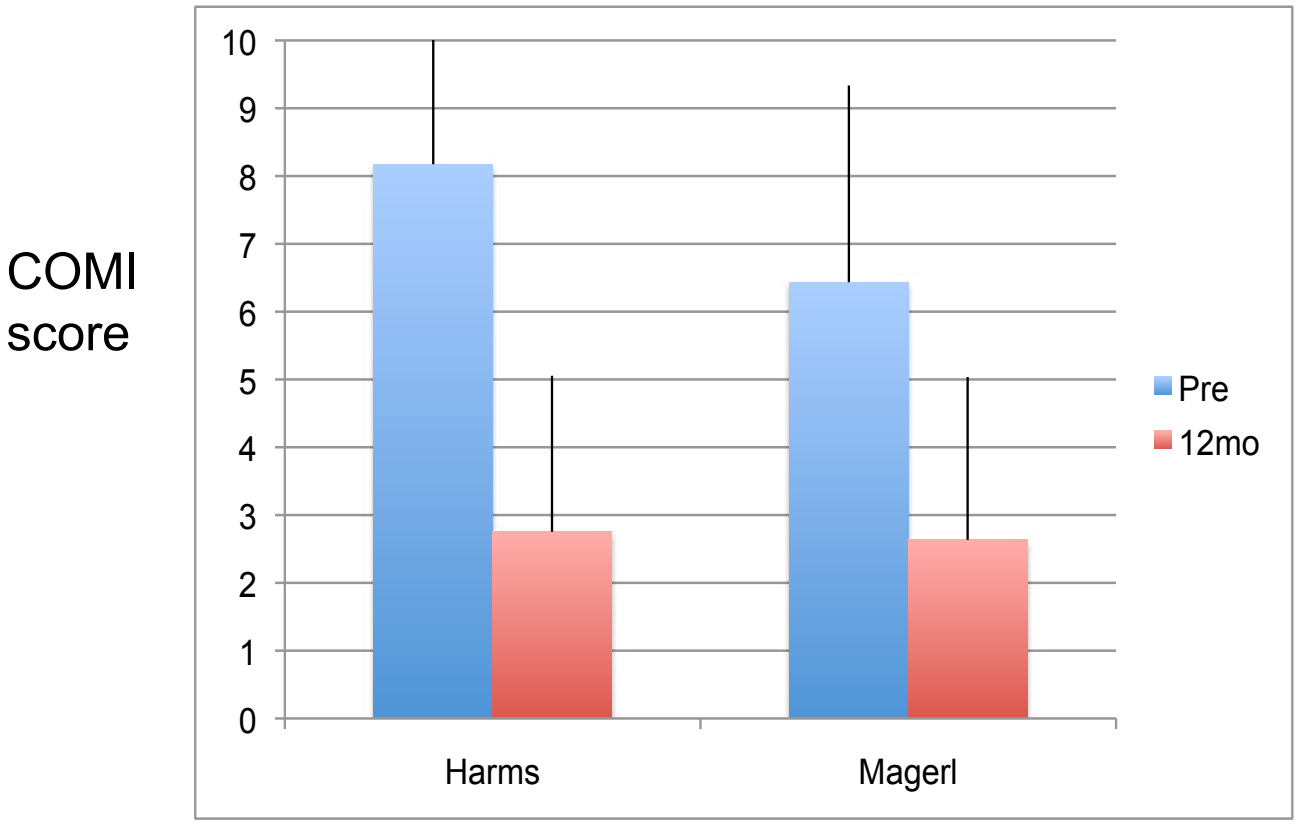


p<0.049, interaction group x timepoint

SCHULTHESS KLINIK
SPINE CENTER

Results

- Patients with a Harms procedure showed a slightly but significantly greater reduction in COMI than Magerl ($p<0.007$), owing largely to their worse baseline status.



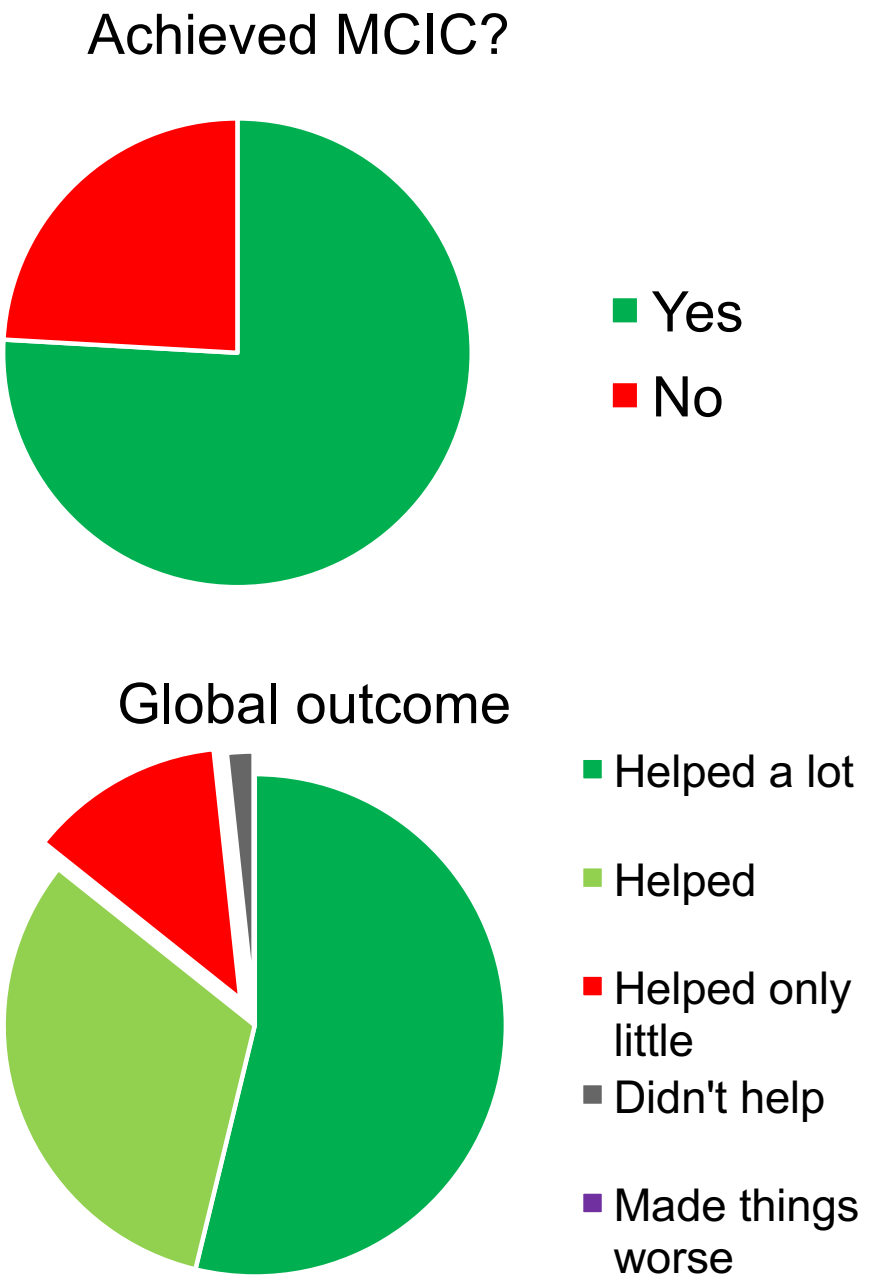
p<0.007, interaction group x timepoint

SCHULTHESS KLINIK SPINE CENTER

Results: 12 mo

- Overall, 76% patients achieved a reduction in COMI of at least 2.2 points (i.e., the MCIC)

- 86% reported a good global outcome (i.e. operation “helped” or “helped a lot”).

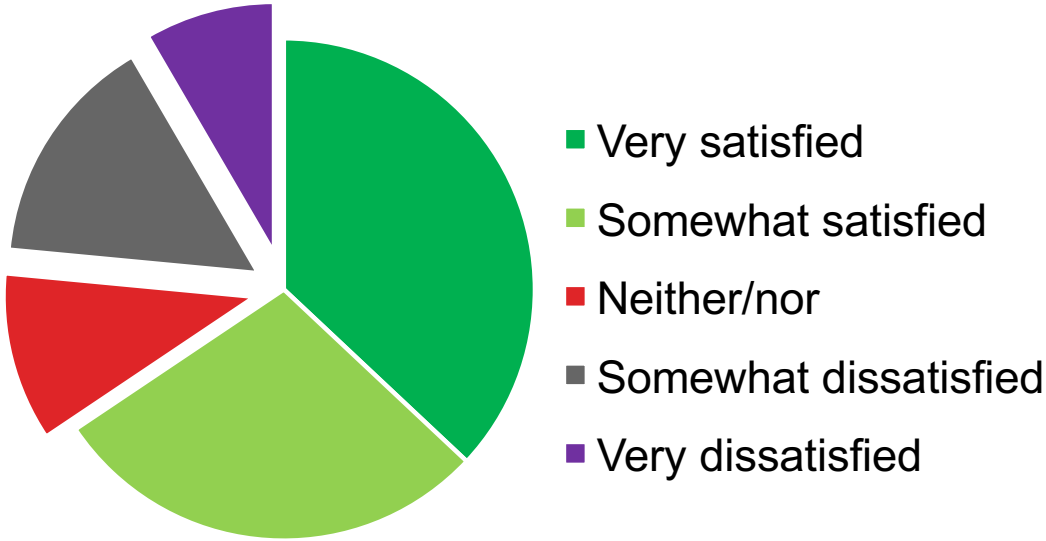


SCHULTHESS KLINIK
SPINE CENTER

Results: 12 mo

- 66% considered they were in an ”acceptable symptom state”

  (*satisfied or very satisfied to spend the rest of their life with their current symptoms)*



SCHULTHESS KLINIK
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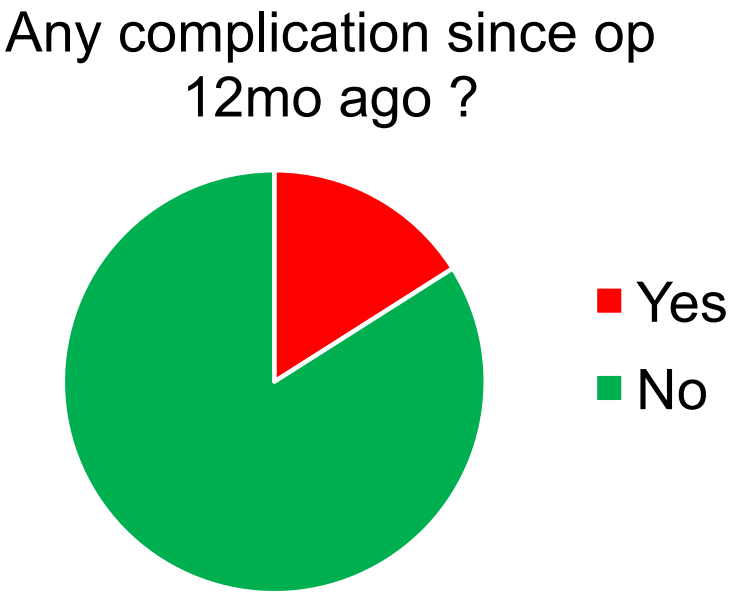
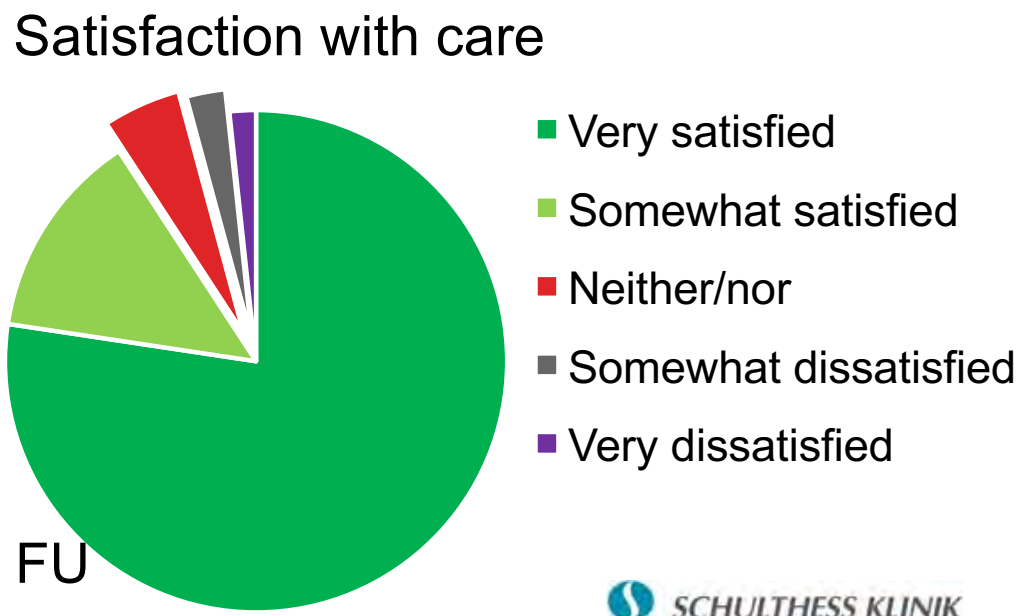
Results: 12 mo

- Self-reported complications 12 mo postop were declared by 16% patients
- 2% reported having had further surgery
- 91% patients were satisfied/very satisfied with their overall medical care!
- Results were consistent at 2y FU





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Discussion

- Very large series with almost complete follow-up.
- C1/2 fusion showed exceptionally good results.
- Despite the complexity of the intervention, outcomes were comparable with or surpassed those in our registry for simple procedures such as ACDF and lumbar discectomy

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https://doi.org/10.1007/s00586-018-5469-4

ORIGINAL ARTICLE

CrossMark

EUROSPINE 2017 FULL PAPER AWARD: Time to remove our rose-tinted spectacles: a candid appraisal of the relative success of surgery in over 4500 patients with degenerative disorders of the lumbar spine, hip or knee

Anne F. Mannion[1] · Franco M. Impellizzeri[1] · Michael Leunig[2] · Dezsö Jeszenszy[3] · Hans-Jürgen Becker[3] · Daniel Haschtmann[3] · Stefan Preiss[2] · Tamas F. Fekete[3]

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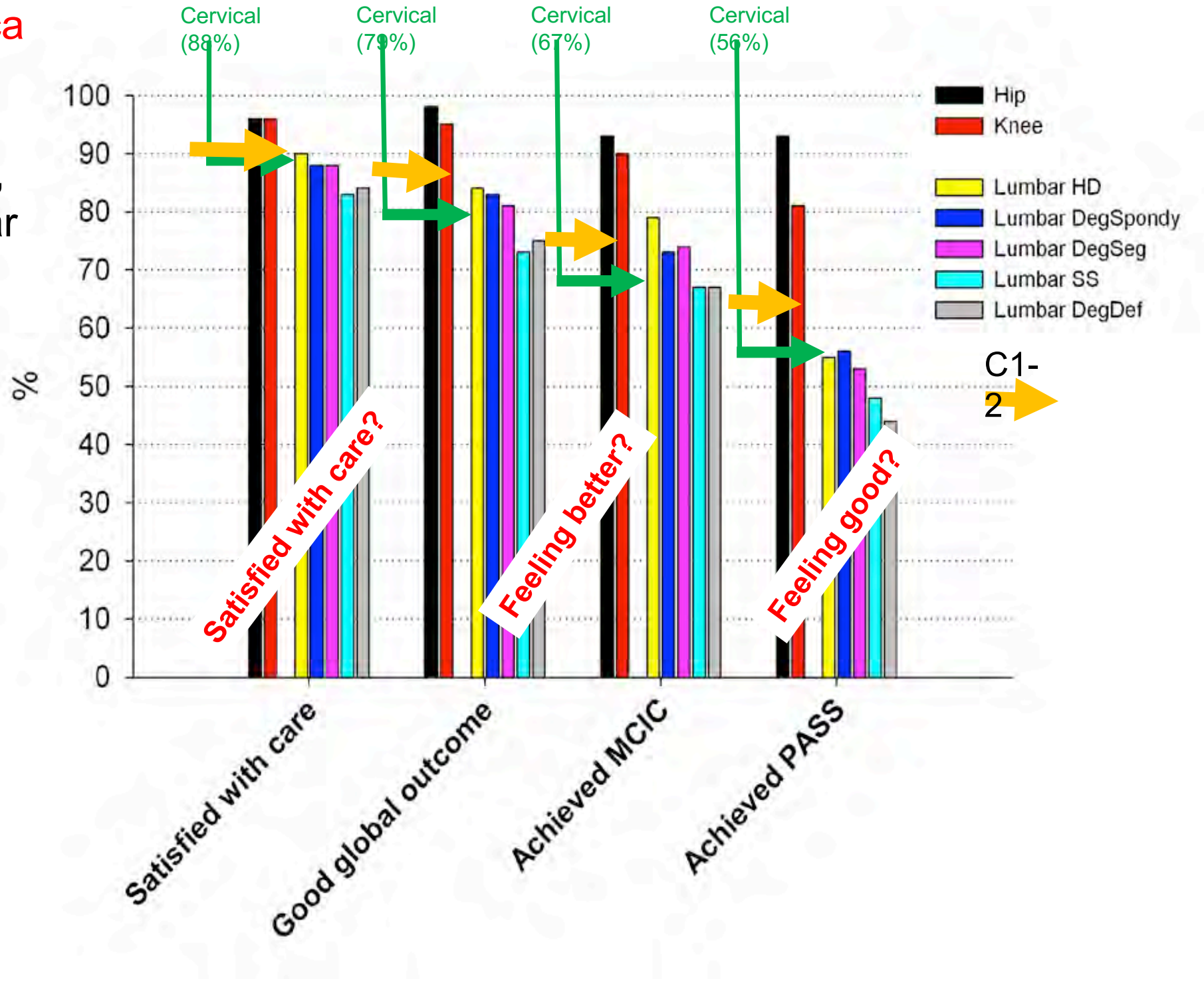
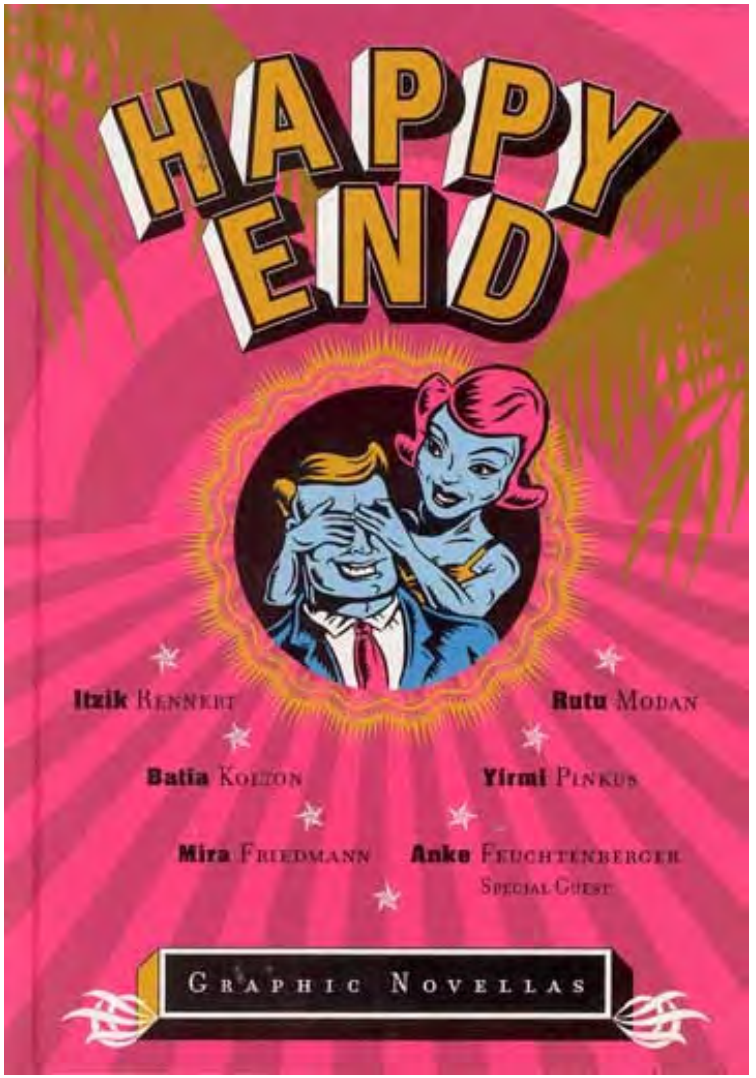
Cervical *vs* hip, knee, lumbar



Discussion

- Perhaps, with this potentially high-risk procedure, indications are tighter and patients are more carefully selected, leading to overall better outcomes.
- In light of these findings, reservations about C1/2 fusion should be reviewed.

Vielen Dank!



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