(Im)possibilities in Craniocervical Chordoma
Sacrifice or Preserve
Ethical rationale in Surgical Treatment

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Pediatric chordoma

Weinstein-Boriani-Biagini

Location CranioCervical + Foramen magnum

Problem: Cruising is not straight Forward

- Posterior ring
- Anterior ring
- Lateral ring

- Involvement Vertebral and Carotid artery

- Sacrifice neurovascular structure to cure patients?
Surgical method and possibility depend on:

- Location tumor vertebrae
- Location Spine
  - Junction Areas (CRANIOCERVICAL deemed DIFFICULT)
- Invasion surrounding structures
- Instrumentation possibilities
  - Possible pedicle screws
  - Vertebral Body replacement
- Multidisciplinary decision

Thoracic was a challenge 10 years ago.

Cervical a challenge today.
Approaches to Chordoma cranio-cervical junction

Female, 22 yr

Approaches
- anterior
  - transoral
  - + transmandibular
  + + transmaxillary
  + transnasal endoscopic
- anterolateral
- direct lateral
- posterolateral
- posterior
- combination of anterior and posterior

How to approach?
Increasing the approach

The next images...

En bloc resection very demanding: high morbidity

C2-C4 chordoma
Transoral, less invasive!

New challenges with Navigation
CCJ: complex anatomy
Can we cure chordoma with complete surgical resection?

- n=42: primary surgery at author’s institution
- CCJ and clivus
- goal of surgery: radical resection
- 50% of patients did not receive radiation therapy

First strike?

- first surgery at the author’s institution: better prognosis
- better surgeons?
- better surgical strategy?
- referral bias: only patients with recurrence get referred?
- analysis bias: counting from a later point in the disease?

First strike?

- Alan Crockard: “The best outlook was associated with the greatest extent of tumor removal achieved during the first operation.”

- Stefano Boriani: “Be as aggressive as the tumor is.”
Surgical strategy

Tailor the strategy to the tumor

- **surgical strategy chordoma**
  - en-bloc resection? seldom possible; technically very demanding
  - piecemeal resection: as complete as possible (intra-op navigation)
- **Only sacrifice structures if possible and decided with patient !!!!!!**
  - Early MRI, and redo if important remnant and possible

- **radiotherapy**
  - stereotactic / proton / conventional
  - is it always necessary?

- choose the appropriate approach(es)
- mind metal implants and route of irradiation
- information & counseling patient with regard to risks

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**Change management & leadership in decision making**

In business as in sports, the greatest asset is made by winning emotions; you must change the mindset, create new movements and show that you are different. You have to do things that people want to see, share and improve. You have to produce a change in the mindset of the relationship between the brand and consumers.

Johan Cruyff - Founder

**Treatment of Spinal Tumors. What will be the gold standard in 2020?**