Pitfalls of biopsy and consequences A monocentric study of 610 patients treated by limb salvage

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Introduction

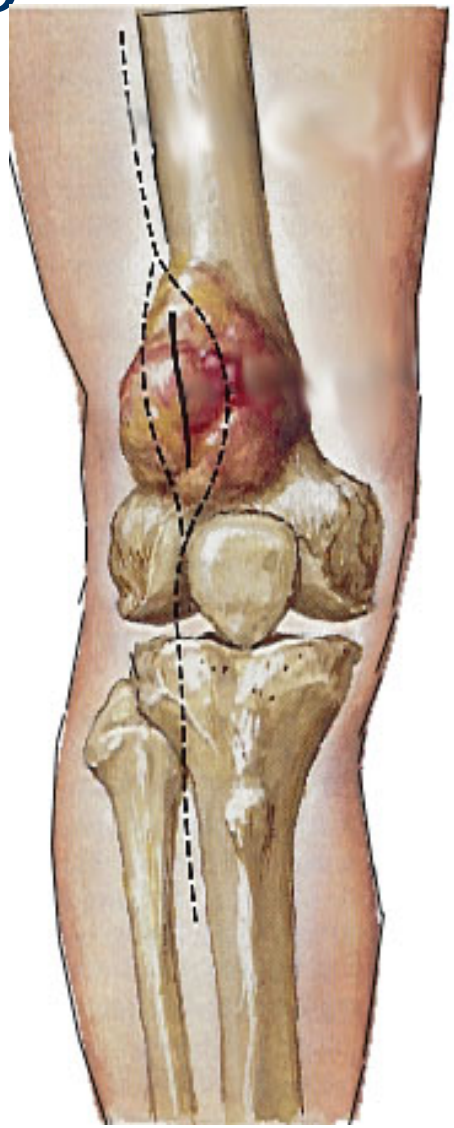
- Many reports attempt to identify the factors which may affect the prognosis in bone sarcoma.
- We wanted to determine if the technique of biopsy and/or the initial management could be a prognostic factor of long term survival and long term local control

Patients

- 610 patients (348 males and 262 females
- Aged 4 to 91 years
- Bone sarcoma of limbs or girdle : central locations have been excluded
- Treated and/or followed up by the same team between 1979 (availability of CT) and 2009.
- Histology was, osteosarcoma (312), chondrosarcoma (143), Ewing (140), MFH or FS (11)) and angiosarcoma (3).

317 patients had the biopsy performed by the surgeon of the team

- after local evaluation of the tumor and planning of future en bloc resection.



3)Short incision and no drainage

293 patients were referred after biopsy

- The consequences of biopsy on modalities of treatment and on outcome were evaluated for every patient with a median follow up of 122 months

Results

- We observed sub optimal biopsy in 52 patients :
- 12 negative biopsies
- 9 misdiagnosis ,
- 2 intra peritoneal contaminations,
- 23 unadapted approaches and
- 12 osteosyntheses and/or prostheses inserted into the tumour.

12 negative biopsies

- Biopsy of Necrotic tumors may be inconclusive.
- Resulting in second biopsy and delay of treatment
- To avoid such situation, the carefull analysis of preoperative imaging to choose the most viable part of the tumor and the presence of pathologist near the operative room are very usefull.

Misdiagnosis

Biopsy	False Dg	Definitive Dg	Number cases
Needle	Metastase	Dedif CS	1
Surgical	GCT	OS	2
Surgical	GCT	MFH	2
Surgical	Chondroma	CS	3
Surgical	Exostosis	CS	1

Unadapted approaches

Unrecognized periostal Ewing. Medullary contamination

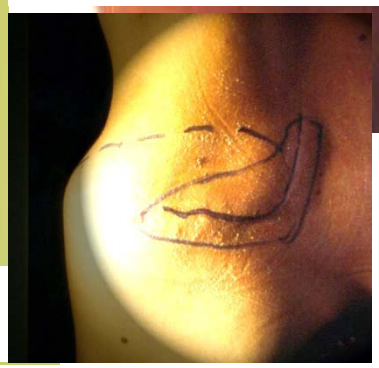
Arthroscopic biopsy
Articular contamination

Drainage out of incision

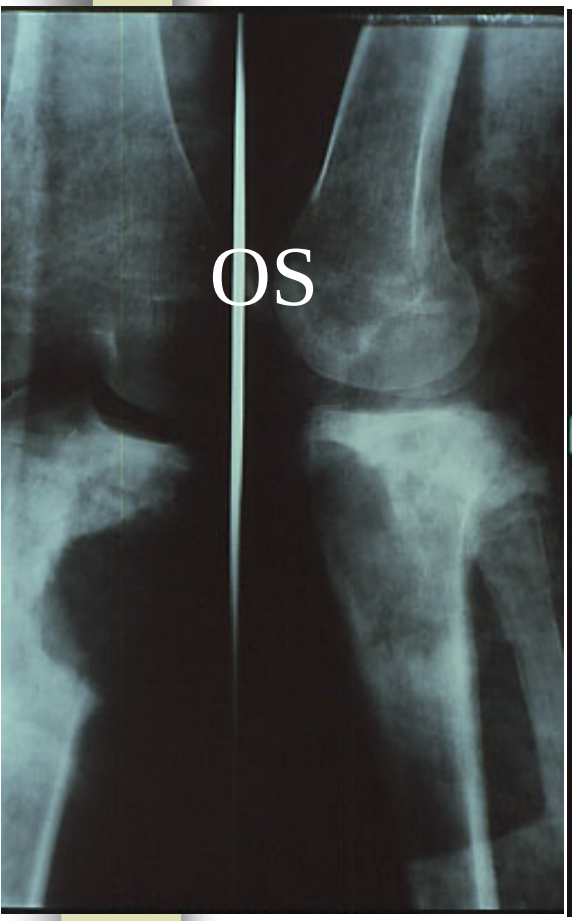
unadapted approaches

3 incisions

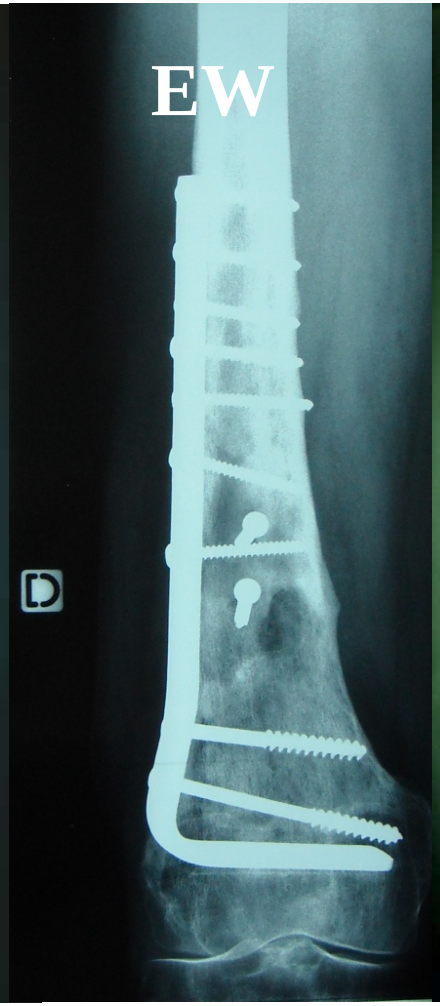
Horizontal incisions



Biopsy+curettage or Resection

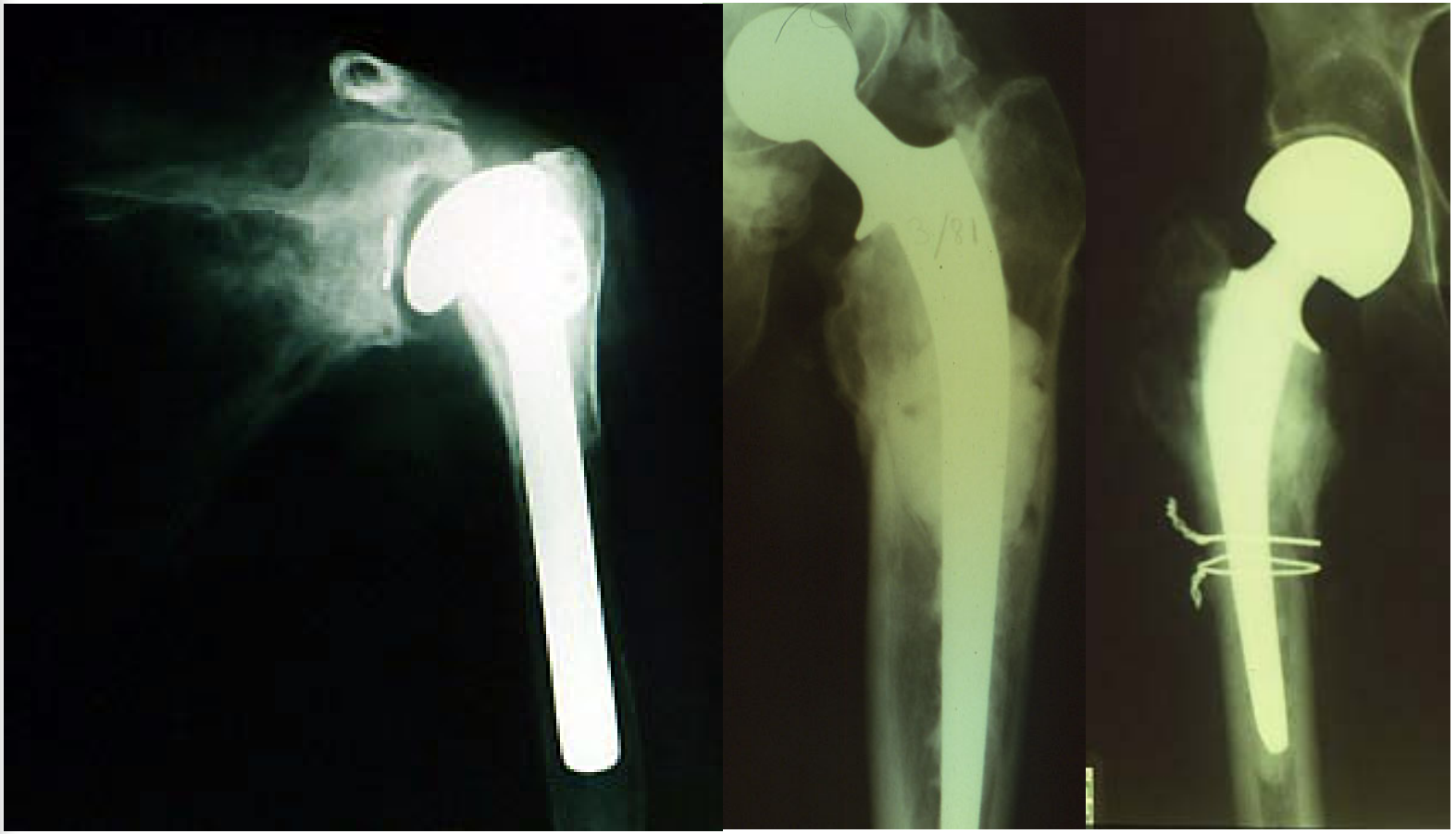


Plates in the tumour.



Nails into the tumour.

Prostheses inserted through the tumour.



Intra peritoneal contaminations

- Chondrosarcoma of right iliac bone presenting as abdominal tumor.
- Transperitoneal biopsy
- Incurable contamination

Resulting in much more difficult limb salvage

- with loss of function and/or of life expectancy.

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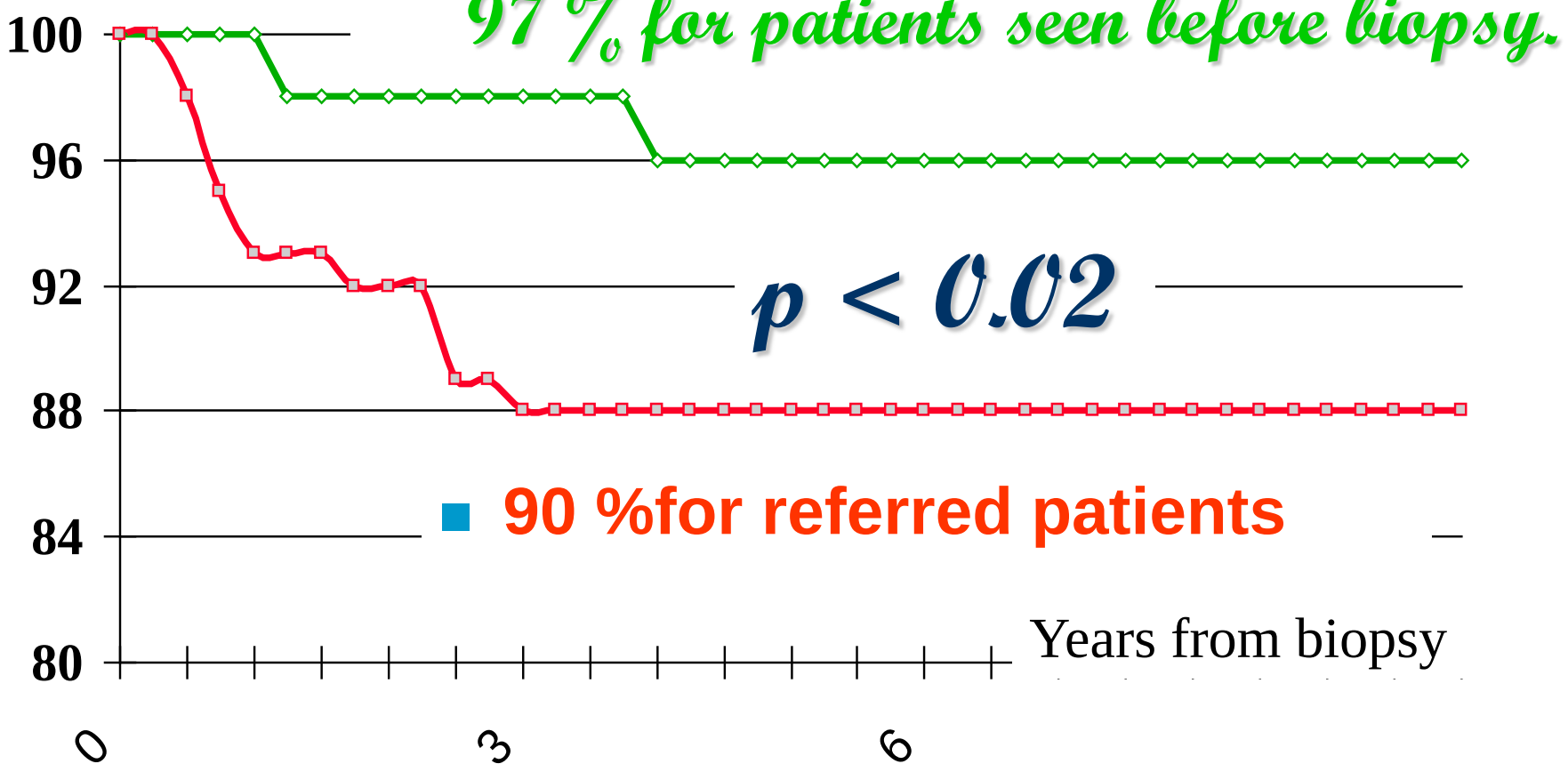
Consequences

- These suboptimal biopsies were directly responsible for
- 2 incurable diseases,
- 3 amputations,
- 9 unadapted surgical treatments
- and 15 long delays in chemotherapy
- resulting in much more difficult limb salvage, with loss of function and/or of life expectancy.

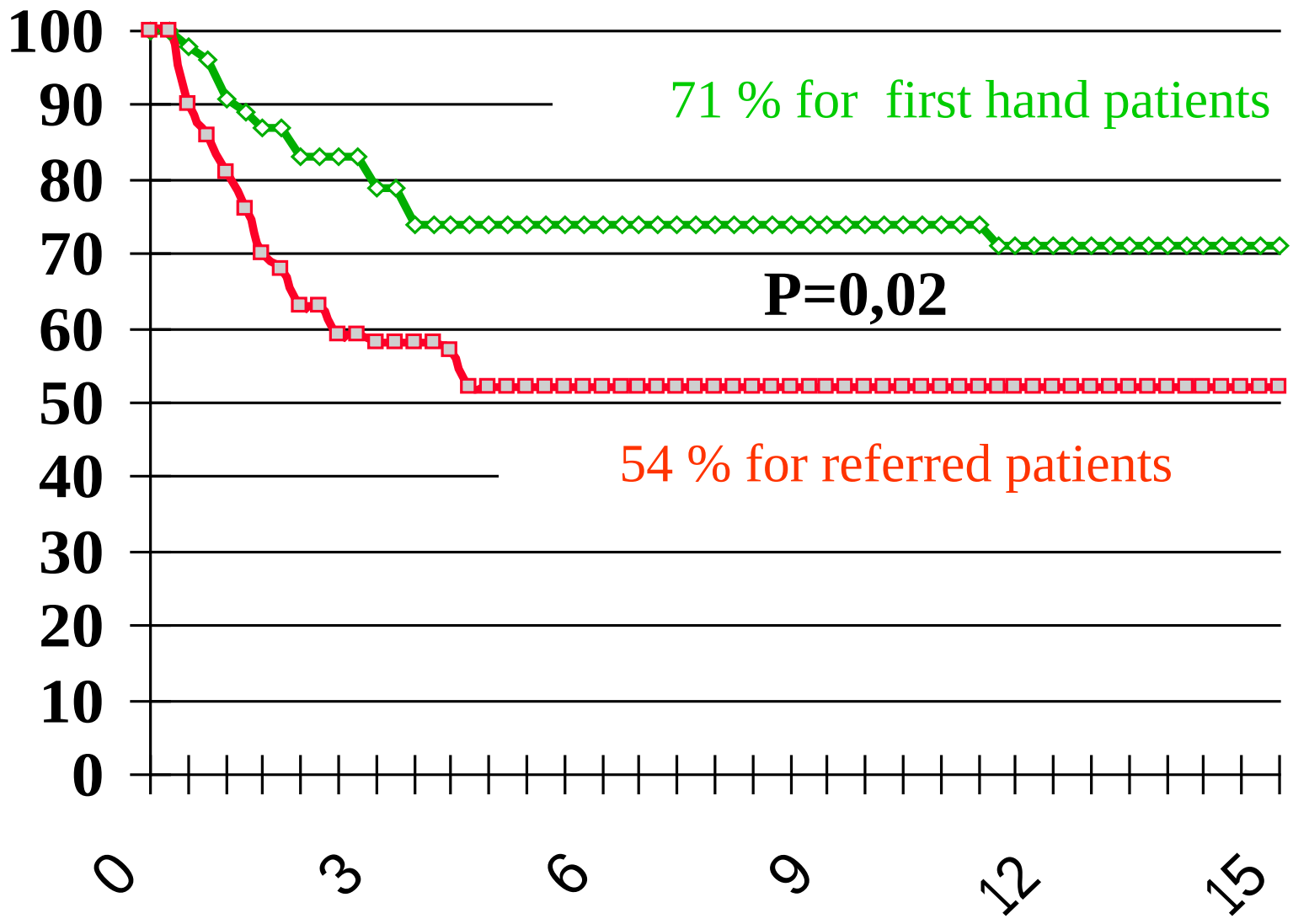
The biopsy must be performed by surgeon trained for tumoral surgery

- The risk of suboptimal biopsy is increased by 12 in referred patients (48/293 vs 4/317).
- We did not observed any improvement during the different decennies.

Local Control



Survival


100
90
80
70
60
50
40
30
20
10
0
0
3
6
9
12
15
71 % for first hand patients
P=0,02
54 % for referred patients

The Hazards of the biopsy.Revisited.

Mankin H .J..J BJS 1996,78A 5:656

- 597 patients (21 institutions) 25 surgeons membres of M.S.T.S.
- sub optimal biopsy in 17.8% cases compelling to irradiate, or leading to more difficult, and more agressive surgery
- 18 patients (3%) were amputated as a consequence of inadapted biopsy
- 10.1%patients had compromized EFS expectancy

- inadapted initial management is more frequent (2-12) when surgeon inexperimented in tumoral surgery

Conclusion

- Initial management by an specialized team is of crucial importance in results of limb salvage and long term survival of patients with localized sarcoma of the limb..
- **When the diagnosis of sarcoma can not be excluded** on prebiopsy medical imaging, **the patient should be referred, before biopsy**, to team experimented in bone tumor oncology.