Our experience with Metal-on-Metal articulation

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Metal-on-Metal articulation?

- What are we speaking about?

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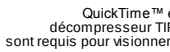

1960

Metal-on-Metal articulation?

- What are we speaking about?

Metal-on-Metal articulation?

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Siwash's THR, 1959

Metal-Metal bearing

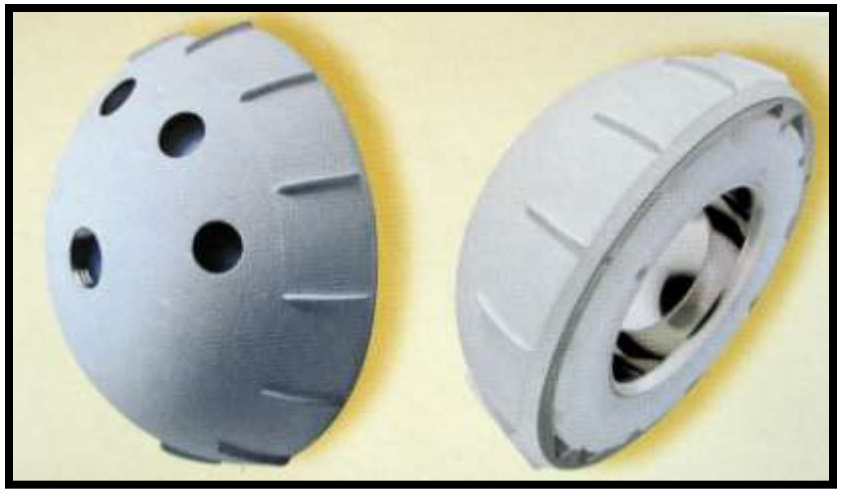
Re-introduce in 1988 by Weber with a metal-on-metal bearing of second generation

Metasul® by Sulzer, high level of carbon

CoCr alloy ; [C] = 0.20 to 0.25%

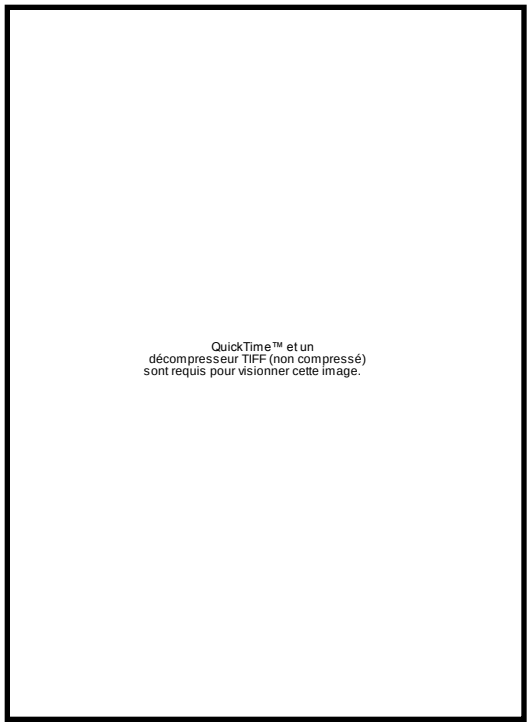
Metal-Metal bearing

- Our choice
- Cedior cup, press-fit HA, unscreewed (Zimmer®)



Metal-Metal bearing

- Our choice :
- Head Metasul diam. 28
- Stem Acora (Sulzer Medica®) cemented, cône 8/10.
- Tige Etoile (Zimmer®),cemented since november 2000



Metal-Metal bearing

- Metal-on-Metal is used in the department since 1999.
- Why this choice ?
  - – Poor results with metal-on-PE arthroplasty in young patients under 50 years
  - – Per operative difficultes when ceramic head breakage
  - – New technology, challenge for University Hospital and clinical research.

Metal-Metal bearing

- At this time
- 1300 metal-on-metal articulations implanted.
- No implant revision for osteolysis or aseptic loosening caused by implant wear
- 18 implant revisions for sepsis, 7 for early mobilisation of the cup, and few for dislocations

Metal-Metal bearing

- BUT
- What's happen with high serum levels of metal ions
- Poor results with cimented cup Metasul under 48 mm diameter at 5 years follow up

(Levai, Augererau)

- And finaly with JY Lazennec's research

Metal-Metal bearing

- Materials and methods:
- Retrospective serie,
- Clinical results (Harris score)
- X rays standart
- TDM reconstruction
- Value of serum metal ions

Clinical results

- 126 patients (140 hips) at mean 7 years follow up.
- 86 males, 40 females
- Mean age of 42 years (29 to 49 years old)
- Clinical results
  - PMA : 17.2
  - Harris : 96
  - Normal life, until re-operation

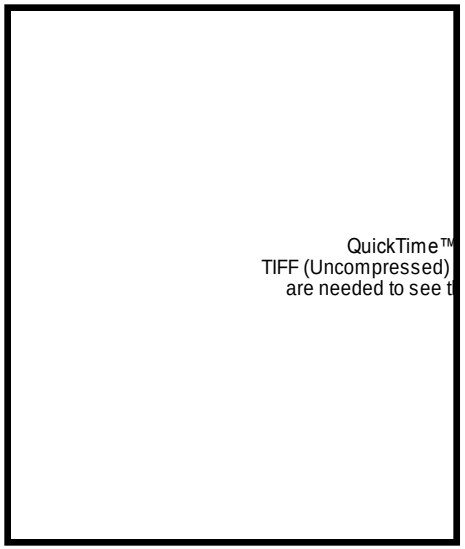
Radiographic results

- M. Ak.
- 38 years old, ONA
- FU: 7 years 6 months
- PMA: 18
- Harris: 100
- Cr: 2,78 Co: 1,86 *µg/L*

Radiographic results

- M. Ca.
- 44 years old, Osteoarthr
- FU : 7 years, 10 months
- PMA : 17
- Cr: 2.44 Co: 1.40 *µg/L*

TDM results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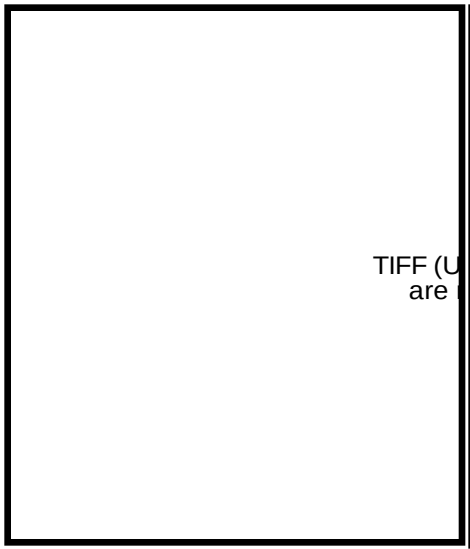
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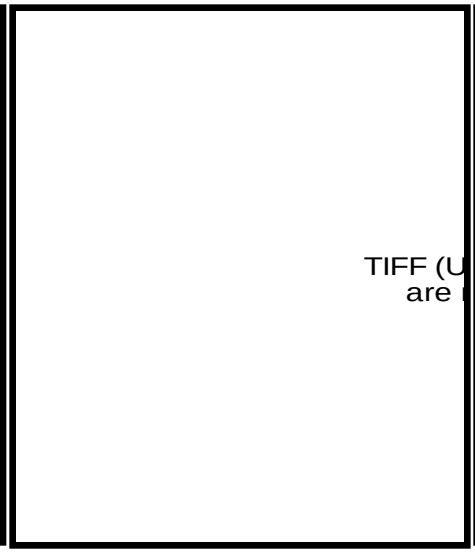
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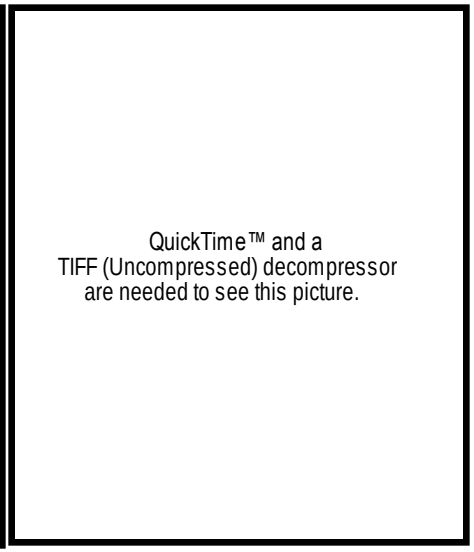
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Serum Co and Cr levels

- Serum levels of Co, Cr and Ti
- Laboratory hôpital Lariboisière, Paris,

  Dr Poupon.
- Measurements were made by atomic absorption spectrometry
- Brodner, JBJS, B-79,1997 : Co < 5 *µg/L*

Dosages sanguins

	Ch.	Lh.	Le.	Pa.	Ak.	Ca.	Du.	Da.	Zu.	Fl.
Co	1.78	1.55	0.62	2.32	2.78	2.44	2.45	1.67	2.75	1.89
Cr	2.03	1.76	1.03	2.30	1.86	1.40	2.38	1.56	2.07	2.14
Ti	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4

Brodner et al., JBJS-B79, 1997. Nl< 5 µg/L

Failure of metal-on-metal articulations

- Low level of Carbon (% carbon)
- Cemented cup Metasul with diameter under 50 mm
- ‘‘Impingement’’ between the cup and sleeved head

Failure metal-on-metal articulation

Dr Christian Delaunay

Conclusions

- Retrospective serie
- Patients under 50 years
- Follow up : at least 7 years

- At this time with 7 years follow up, metal-on-metal articulations with Metasul is steel the best bearing.

We think Metasul articulation with Durom cup, large diameter, and a cementless stem like the Avenir is probably the best we can do for our patients

Conclusions

- "Au point de perfection qu'atteint aujourd'hui la science, il est peu probable que de grandes découvertes restent encore à faire."

  François Arago, 1848

  Polytechnicien, astrophysicien et ministre de la guerre ….

Thank you for your attention