



Convegno  
**FISICA E RADIOTERAPIA**  
**NUOVE FRONTIERE TRA HIGH TECH E POST GENOMICA**  
Perugia 2/07/2010  
Convento dei Francescani – Monteripido

# **il punto di vista del radioterapista: rischi e benefici del recente sviluppo tecnologico**

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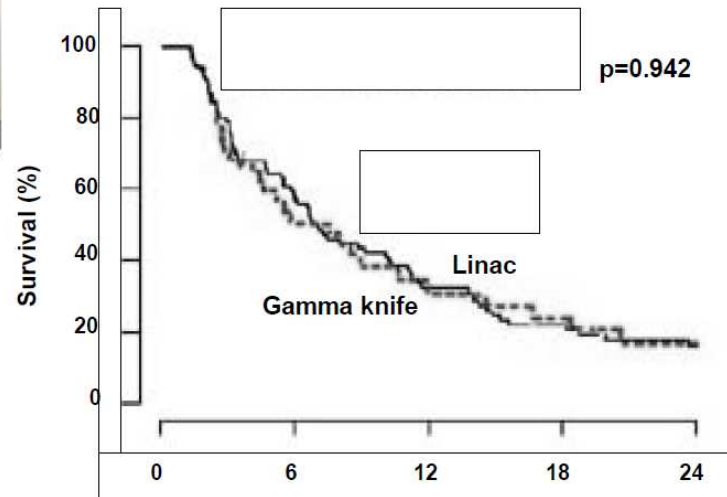
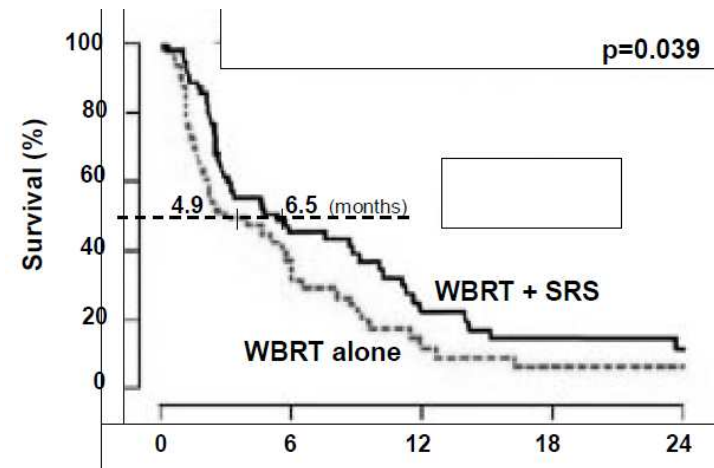


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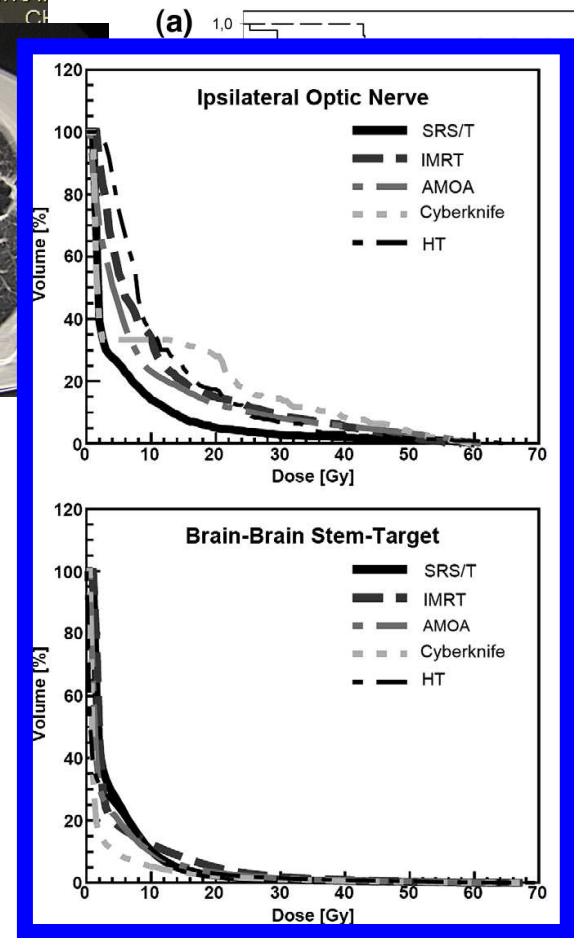
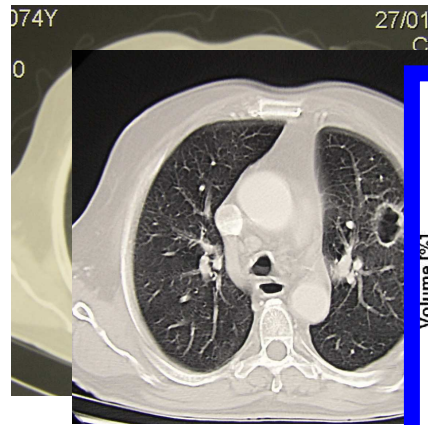


# gammaknife

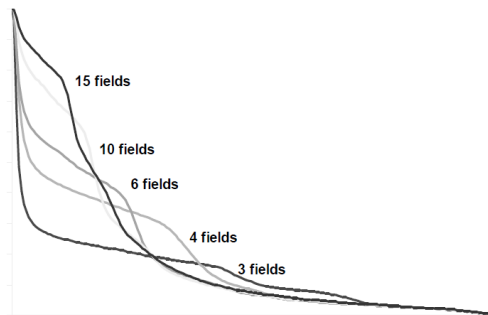


Andrews 2004, RTOG 9508

# cyberknife



Cumulative DVH of normal brain



Ajithkumar 2004, Cozzi 2006

# protoni



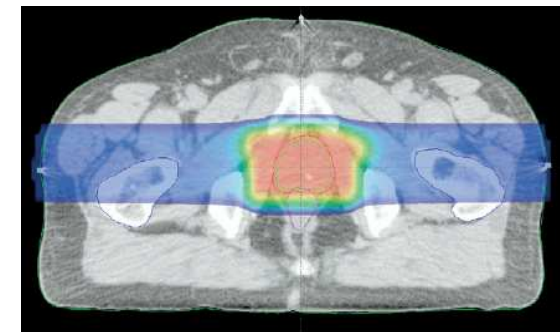
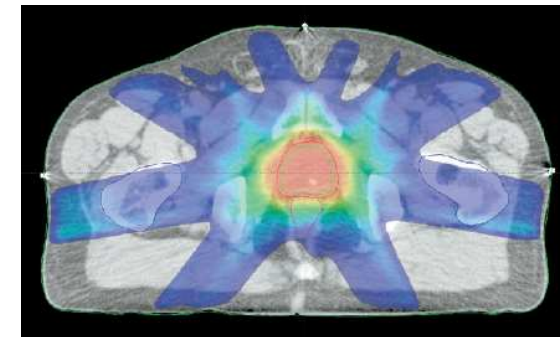
RT plan



after RT

Gastro-intestinal toxicity

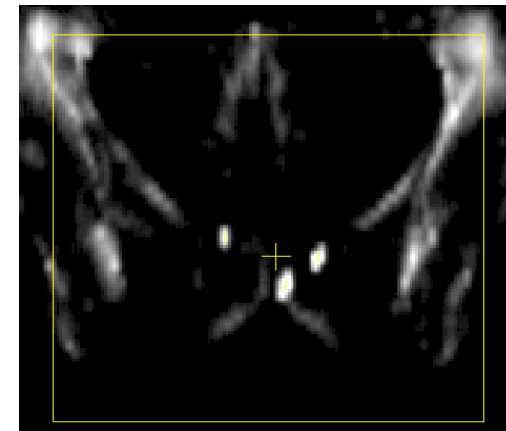
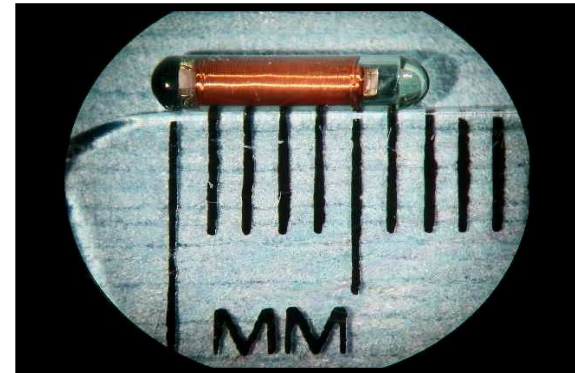
Late GI toxicity	70Gy	80Gy
≥ Grade 2	8%	18%



Brada 2007, Krejcarek 2007, Zietman 2005, Zietman 2010

# image-guided RT

Calypso implantable electromagnetic  
Beacon transponder system



Calypso Medical Technologies Inc.

# cobaltoterapia



Mulago Hospital, Kampala, Uganda

# Campobasso

- **2002: 3D conformal RT**
- **2003: extracranial stereotactic RT**
- **2004: IMRT (breast, prostate), Image Fusion**
- **2005: IMRT SIB (H&N, pleural mesothelioma)**
- **2006: IMRT (endom.); IMRT SIB (prostate, brain)**
- **2007: 4D RT (ABC; gold seeds);**
- **2008: image-guided RT (PET-TC)**
- **2009: VMAT (endometrium)**
- **2010: stereo-VMAT, VMAT SIB**

# **valutazione delle tecnologie**

- **in base a evidenze cliniche ...**
- **... su end-points rilevanti ...**



# macchine/tecnologie complesse

- in genere costose
- spesso adeguate quanto “standard”
- talvolta **meno** adeguate
- mai miracolose

# livello tecnologico

- **dipende dalle apparecchiature?**
- **è sinonimo di qualità?**

# qualità

- **multi-specialità**
- **adeguatezza**
- **EBM, linee guida**
- **quality assurance**