TITLE: Multidimensional Surgical Imaging Platforms for Non-Orthopedic indications: Clinical Effectiveness, Cost-Effectiveness, and Guidelines

DATE: 02 June 2015

RESEARCH QUESTIONS

1. What is the clinical effectiveness of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications?

2. What is the cost-effectiveness of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications?

3. What are the evidence-based guidelines regarding the optimal use of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications?

KEY FINDINGS

Two non-randomized studies were identified regarding the clinical effectiveness of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, economic studies and guidelines. The search was also limited to English language documents published between January 1, 2013 and May 21, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

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<th>Table 1: Selection Criteria</th>
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<tr>
<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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<td><strong>Comparator</strong></td>
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<td><strong>Outcomes</strong></td>
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<td><strong>Study Designs</strong></td>
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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

Two non-randomized studies were identified regarding the clinical effectiveness of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, economic evaluations, or evidence-based guidelines were identified. In addition, no evidence regarding the cost-effectiveness or optimal use of this technology for non-orthopedic indications was identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Two non-randomized studies\(^1\)\(^2\) were identified regarding the clinical effectiveness of image-guided surgery using multidimensional surgical imaging platforms for non-orthopedic indications. Both studies\(^1\)\(^2\) contained evidence to support a potential clinical benefit of these technologies.

One study\(^1\) investigated the effect of 3-dimensional (3D) fusion computed tomography (CT) on the performance of fenestrated endovascular aortic repair. Significantly reduced radiation exposure, fluoroscopy time, and procedure time, as well as reduced blood loss and length of stay were reported for the 3D fusion CT group. The second study\(^2\) reported on survival rates associated with the application of real-time intraoperative magnetic resonance imaging-guided interstitial brachytherapy for patients with gynecologic cancer. Overall and relapse-free survival rates were 80% and 79% at one year, respectively, and declined over year two and three.\(^2\)
Long-term actuarial gastrointestinal, bladder, and vaginal toxicity rates were below 10%. The authors reported that 3D image guidance may reduce toxicity, and maximize opportunity for tumor targeting and sparing of normal tissues.

No relevant evidence was identified regarding the cost-effectiveness or optimal use of this technology for non-orthopedic indications; therefore, no summary can be provided.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified

Systematic Reviews and Meta-analyses
No literature identified

Randomized Controlled Trials
No literature identified

Non-Randomized Studies


Economic Evaluations
No literature identified

Guidelines and Recommendations
No literature identified

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APPENDIX – FURTHER INFORMATION:

Systematic Reviews – Unclear Intervention