Canadian Agency for Drugs and Technologies in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

TITLE: Retinal Surgeries in Non-Hospital Facilities: Clinical and Cost-Effectiveness

DATE: 9 December 2014

RESEARCH QUESTIONS

1. What is the evidence for the clinical effectiveness of retinal surgeries performed in non-hospital facilities?

2. What is the evidence for the cost-effectiveness of retinal surgeries performed in non-hospital facilities?

KEY FINDINGS

Four non-randomized studies and one economic evaluation were identified regarding the clinical and cost-effectiveness of retinal surgeries performed in non-hospital facilities. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 12), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and December 1, 2014. 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.

SELECTION CRITERIA

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

Table 1: Selection Criteria	
Population	Patients with a retinal tear or detachment, and Anesthesia Risk Score (ASA) of less than 4.
Intervention	Retinal surgery performed in non-hospital surgical facilities
Comparator	Retinal surgery performed in hospital, or no comparator
Outcomes	Benefits (e.g., shorter waiting times, improved hospital capacity), harms Cost-effectiveness (direct operating costs)
Study Designs	Health technology assessments, systematic-reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations

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, and economic evaluations.

Four non-randomized studies and one economic evaluation were identified regarding the clinical and cost-effectiveness of retinal surgeries performed in non-hospital facilities. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Four non-randomized studies[1-4] and one economic evaluation[5] were identified regarding the clinical and cost-effectiveness of retinal surgeries performed in outpatient or non-hospital facilities. None of the abstracts described patient Anesthesia Risk Scores and most reported an outpatient setting without specifying whether this included or excluded non-hospital facilities.

One study[1] examined the effectiveness of outpatient versus in-patient scleral buckling surgery for rhegmatogenous retinal detachment. Best-corrected visual acuity (BCVA), functional, and anatomical success rates were not significantly different between outpatient and in-patient groups at six months post-surgery. The authors concluded that uncomplicated cases of rhegmatogenous retinal detachment may not require hospitalization for successful surgical treatment.

One study[3] evaluated the three-year clinical outcomes of office-based pneumatic retinopexy (PR) with filtered air for the treatment of superior rhegmatogenous retinal detachment. Successful retinal reattachment was achieved in 80.5% of eyes after a single operation; the success rate increased after subsequent PR and other procedures. Visual acuity remained stable or improved after PR in 87% of patients. The authors suggested that using air rather than

expansile gases in office-based PR would decrease patient recovery times and associated health care costs.

Two studies[2, 4] described the effectiveness and safety of fluid-gas exchange for the treatment of postvitrectomy macular hole[2] or retinal detachment[4] in an outpatient setting. One study[2] reported anatomic success for 89% of eyes up to three weeks after the fluid-gas exchange. Type 1 closure was achieved in a higher percentage of eyes than type 2 closure, and was associated with a statistically significant increase in BCVA.[2] Transient high intraocular pressure and two retinal detachments were reported following fluid-gas exchange.[2] The second study[4] reported an overall success rate of 65.7%, with stable or improved visual acuity in 80% of cases. The authors concluded that fluid-gas exchange was a cost-effective alternative outpatient procedure for the repair of superior and posterior pole retinal detachments.[4]

One economic evaluation[5] analyzed the costs and benefits of rhegmatogenous retinal detachment repair in hospital-based and ambulatory surgery centre settings. The range of weighted costs for PR, established based on estimated success rates of primary repair, as well as the weighted costs for scleral buckling and pars plana vitrectomy were higher for the hospital surgery setting than for the ambulatory surgery centre setting. Likewise, the range of dollars per quality-adjusted life year saved was higher in the hospital surgery setting than in the ambulatory surgery centre setting.

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

1. Lee JC, Kim YC. Outpatient- and inpatient-based buckling surgery: a comparative study. Clin Ophthalmol [Internet]. 2014 Apr 25 [cited 2014 Dec 9];8:793-7. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4010624
   PubMed: PM24812485

2. Rao X, Wang NK, Chen YP, Hwang YS, Chuang LH, Liu IC, et al. Outcomes of outpatient fluid-gas exchange for open macular hole after vitrectomy. Am J Ophthalmol. 2013 Aug;156(2):326-33.
   PubMed: PM23688710

3. Yee KM, Sebag J. Long-term results of office-based pneumatic retinopexy using pure air. Br J Ophthalmol. 2011 Dec;95(12):1728-30.
   PubMed: PM21900226

4. Jang JH, Kim YC, Kim KS. The efficacy of fluid-gas exchange for the treatment of postvitrectomy retinal detachment. Korean J Ophthalmol [Internet]. 2009 Dec [cited 2014 Dec 9];23(4):253-8. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2789948
   PubMed: PM20046684

Economic Evaluations

5. Chang JS, Smiddy WE. Cost-effectiveness of retinal detachment repair. Ophthalmology. 2014 Apr;121(4):946-51.
   PubMed: PM24411577

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APPENDIX – FURTHER INFORMATION:

Non-Randomized Studies

Alternate Setting

6. Vingolo EM, Nebbioso M, Domanico D, Valente S, Frati P. Post-operative hospitalization in retinal detachment correlation to recurrences. Ann Ist Super Sanita. 2013;49(4):336-9. PubMed: PM24334776

Comparative Harms for Medical Staff

7. Ghauri AJ, Amissah-Arthur KN, Rashid A, Mushtaq B, Nessim M, Elsherbiny S. Sharps injuries in ophthalmic practice. Eye (Lond) [Internet]. 2011 Apr [cited 2014 Dec 9];25(4):443-8. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3171230 PubMed: PM21336251

Economic Evaluations – Intervention Not Limited to Retinal Surgery

8. Murray TG, Tornambe P, Dugel P, Tong KB. Evaluation of economic efficiencies in clinical retina practice: activity-based cost analysis and modeling to determine impacts of changes in patient management. Clin Ophthalmol [Internet]. 2011 [cited 2014 Dec 9];5:913-25. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3141852 PubMed: PM21792278

Additional References

9. Morales-Canton V, Kawakami-Campos PA. Machines and cutters: VersaVIT - potential and perspectives of office-based vitrectomy. Dev Ophthalmol. 2014;54:17-22. PubMed: PM25196747

The concept of office-based vitrectomy has been a topic for several years; however, the large size of the vitrectomy machines has limited the options for many years. Today, though, smaller machines can offer adequate performance regarding vitrectomy. As a result, we can now make more arguments for this type of surgery to be performed in the office environment, despite the limitations these machines may still have.