Endovascular Abdominal Aortic Aneurysm Repair Versus Open Surgery: A Review

Context
The aorta is a large blood vessel that carries blood away from the heart to much of the body. In some people part of the aorta can become abnormally large or bulge and this is referred to as an aneurysm. The exact cause of abdominal aortic aneurysms (AAAs) is uncertain, but risk factors include high blood pressure, high cholesterol, smoking, obesity, and being male. AAA occurs in 5% of men and 1% of women older than 65. AAA rupture is a significant cause of death.

Technology
Elective repair of AAA (repair of an aneurysm that has not ruptured) has the goal of preventing rupture. When AAA rupture occurs, emergency surgery is required. Conventional open surgery techniques result in reasonable long-term survival, but can be risky — especially in older patients and those with other serious medical conditions. Endovascular AAA repair (EVAR) is a catheter-based procedure that does not require either an abdominal incision or dissection and clamping of the aorta. In Canada, between April 2004 and March 2009, close to 16,000 AAA procedures were performed, with elective EVAR procedures increasing from 11.5% in 2005 to 35.5% in 2009.

Issue
A review of the clinical and cost-effectiveness of EVAR compared with traditional surgical repair will help to guide decisions about the treatment of AAA. This review will update a previous review completed in 2009.

Methods
A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages
For the repair of AAA:
- Elective EVAR reduces 30-day post-operative all-cause mortality compared with open surgery.
- There was no difference in long-term mortality between elective EVAR and open surgery.
- EVAR resulted in shorter hospital stays and lower hospitalization costs than open surgery for elective or emergency repairs.
- EVAR is more costly but may be more cost-effective than open surgery for elective or emergency repairs.

Results
The literature search identified 314 citations, with no additional articles identified from other sources. After screening the abstracts, 8 studies were deemed potentially relevant, with 4 meeting the criteria for inclusion in this review: 2 systematic reviews and 2 cost-effectiveness studies.