

# Impact on hospital healthcare resources, comparison of endoluminal versus surgical treatment strategies for lower limb bypass in PAD patients

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## BACKGROUND

Peripheral arterial disease (PAD) is a common condition with increasing prevalence in an aging population. It is an atherosclerotic process that reduces blood flow to the lower limbs. In occluded or stenosed arteries blood flow can be restored by performing a bypass procedure on the lower limb bypass procedure. For complex atherosclerotic lesions, the gold standard treatment is a venous surgical bypass<sup>1,2</sup>. With advances in endovascular therapies, complex lesions can also be treated with covered stent-grafts, providing a less invasive option for the patient.

## OBJECTIVES

This study compares the impact on hospital resources of two different treatment strategies,

- endoluminal bypass using the GORE® VIABAHN® Endoprosthesis with PROPATEN Bioactive Surface† (EB-CS) and
- surgical bypass using vein or prosthetic vascular grafts (SB-VG).

## METHODS

A 50 patient scenario was modelled in MICROSOFT® EXCEL® for each strategy, EB-CS and SB-VG and the change in resource consumption was compared between the two strategies.

The SUPERB study<sup>3</sup> (NCT01220245) was a multicentre prospective randomised controlled trial comparing endoluminal bypass using the GORE® VIABAHN® Endoprosthesis with PROPATEN Bioactive Surface (GORE® VIABAHN® Device) to surgical bypass, showing less morbidity, faster patient recovery and similar patency rates at one year.

Resource consumption use and rates were sourced from the SUPERB clinical trial patient case report forms, including hospital stay for bypass procedure, use of different types of bed locations (ward, medium or intensive care), operating room time, general/local anaesthesia, number of prosthetic vascular grafts and covered stent-grafts, wound infections and reinterventions over 12 months (Table 1).

Table 1: Resource consumption rates

	EB-CS	SB-VG
Number of days patient uses vascular bed	3.59	5.34
% of patients that use medium care bed	11%	40%
Number of days patient uses medium care bed	1.00	1.15
% of patients that use ICU bed	0%	2%
Number of days patient uses ICU bed	0.00	4.00
Time spent in operating room for procedure (hours)	2.00	3.00
% of patients using general anaesthesia	62%	79%
% of patients that have a wound infection	5%	24%
% of patients with wound infection that are re-admitted to hospital	33%	38%
Number of days patient stays in hospital when re-admitted for wound infection	2.00	10.00
% of patients that need a reintervention (hospital admission)	36.8%	36.4%
Number of days patient stays in hospital when admitted for reintervention	4.40	3.50
% of patients that use a prosthetic graft	N/A	35%

The hospital provider perspective was adopted. Time horizon was 12 months, capturing the initial procedure and any subsequent complications.

## RESULTS

Overall, compared to the SB-VG, the EB-CS treatment strategy used less hospital resources over 12 months. Based on a 50 patient scenario, the EB-CS strategy used

- 118 less vascular ward bed days (261 versus 379) (Figure 1),
- 18 less medium care bed days (5 versus 23),
- 3 less intensive care bed days (0 versus 3) (Figure 2) and
- 50 hours less operating room time (100 hours versus 150 hours).

Figure 1: Results — vascular ward bed days

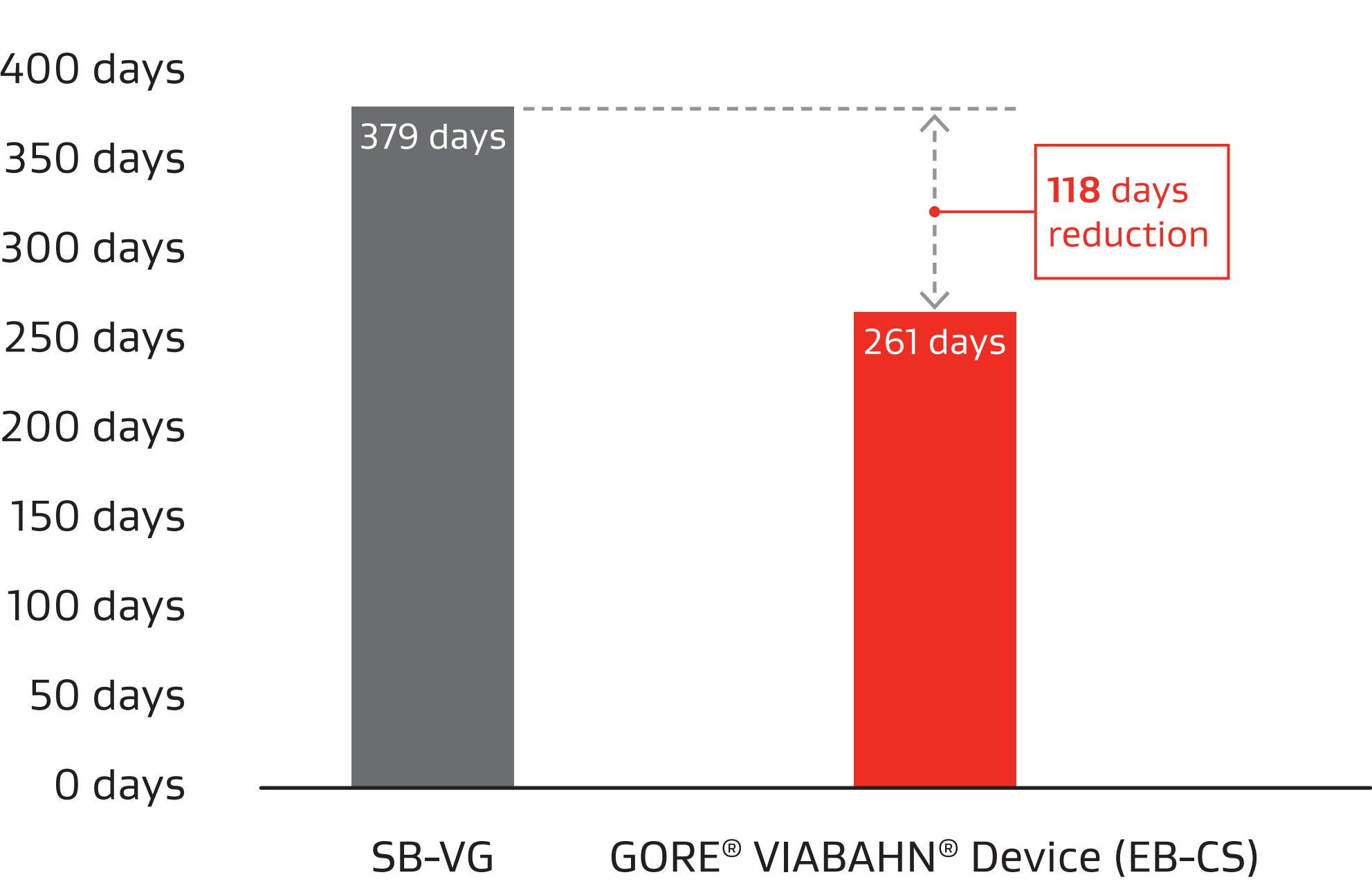
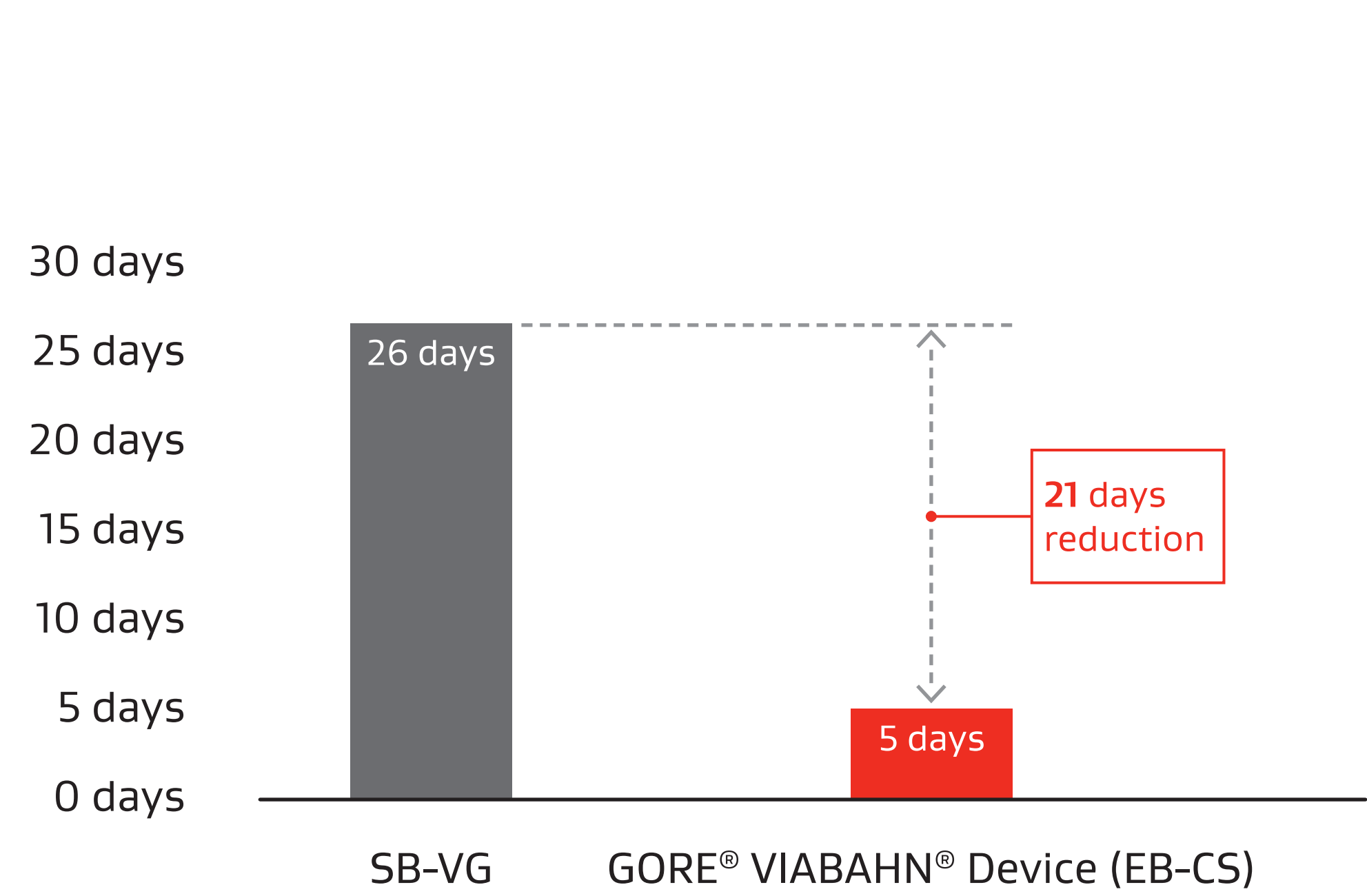


Figure 2: Results — intensive and medium care bed days



The EB-CS strategy had fewer patients who needed general anaesthesia (31 versus 39), fewer wound infections (3 versus 12 infections) and subsequent hospitalizations (1 versus 5). Reinterventions rates were similar between the strategies.

## CONCLUSIONS

Using an endovascular strategy for lower limb bypass reduces critical hospital resource use, e.g., operating room time, medium and intensive care beds and ward bed days that can be utilized elsewhere to treat other patients. In the current climate of high pressure on hospital services and patient waiting lists, the opportunity cost of these resources should be considered.

## REFERENCES

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3. Reijnen MMPJ, van Walraven LA, Fritschy WM, et al. 1-year results of a multicenter randomized controlled trial comparing heparin-bonded endoluminal to femoropopliteal bypass. *JACC: Cardiovascular Interventions* 2017;10(22):2320–2331.

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† As used by Gore, PROPATEN Bioactive Surface refers to Gore's proprietary CBAS® Heparin Surface.  
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