

REVIEW

Sexual Dysfunction After Abdominal Aortic Aneurysm Surgical Repair: Current Knowledge and Future Directions

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WHAT THIS PAPER ADDS

Investigation into the impact of surgical treatment for abdominal aortic aneurysm is scarce. This review summarises current knowledge on the occurrence of sexual dysfunction after aortic aneurysm surgical repair in both men and women. Current issues and future directions are highlighted to better assess this complication and improve care provided to patients.

Background: Abdominal aortic aneurysm (AAA) represents a major health concern and the curative treatment relies on surgical approaches including open and endovascular aortic repair (EVAR). While epidemiological studies have addressed the major outcomes including mortality and life threatening complications, the impact of surgical intervention on sexual function has been less well described. The aim of this review was to summarise current knowledge on the occurrence of sexual dysfunction in the context of AAA surgical repair and to explore whether surgical techniques could have differential impact.

Methods: The MEDLINE database was searched in May 2017 and all studies related to sexual dysfunction assessment following AAA surgical repair were included. Given the heterogeneity of the definitions of sexual dysfunction and its assessment, a comprehensive literature review was performed rather than a meta-analysis.

Results: The published literature search identified 29 studies including prospective, retrospective, and single centre and multicentre trials. The post-operative erectile dysfunction prevalence varied from 7.4% to 79% following open repair and from 4.7% to 82% following EVAR. The incidence of de novo erectile dysfunction was estimated, respectively, at 20%, 26.6%, and 83% after open repair and at 11% and 14.3% after EVAR. Erectile dysfunction rates varied from 5.3% to 8.2% in patients who had EVAR with unilateral hypogastric artery exclusion and from 5.1% to 46.6% in patients who had bilateral hypogastric artery exclusion. The rates of retrograde ejaculation after surgery varied from 3.3% to 9% after open repair and from 6% to 6.6% after laparoscopic repair.

Conclusion: Clinical studies demonstrated heterogeneous results, which could be attributed mainly to methodology including study design and criteria used to evaluate sexual dysfunction. Given the potential consequences of sexual dysfunction on quality of life, this review highlights the real need to inform patients and to better assess this potential side effect to improve its management in patients undergoing AAA surgical repair.

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INTRODUCTION

Abdominal aortic aneurysm, defined as a dilatation of the aorta, represents a life threatening disease and is associated with extremely high rates of mortality in case of aortic rupture.¹ Although the main risk factors have been identified,² curative pharmacological treatments are still lacking

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and surgical approaches including open aortic repair and endovascular aortic repair (EVAR) represent the only therapeutic options currently available.^{3,4} Several studies have addressed the short- and long-term outcomes in patients undergoing AAA surgical repair.^{5–8} Whereas the major outcomes including mortality and vascular complications have been described widely, the impact of AAA and its surgical treatment on sexual function are scarcely reported. Sexual dysfunction (SD) corresponds to persistent or recurrent disorders of sexual desire/interest, arousal, orgasm, or sexual pain.⁹ In men, SD can be caused by erectile dysfunction (ED), which results from the inability to attain or maintain an erection,¹⁰ or ejaculation disorders. The prevalence of ED increases with age and ED is now considered to be a major health problem.^{10,11} Several epidemiological studies have linked the development of ED to cardiovascular risk factors and ED has been identified as a strong predictor for cardiovascular diseases.^{10,12} However, the association between ED and AAA and its surgical treatment has been poorly described. In this context, the aim of this review was to summarise current knowledge on SD prevalence and incidence in the context of AAA surgical repair and to explore whether different surgical techniques have an impact. Based on clinical studies, current issues and future directions are highlighted to improve care provided to patients.

PRE-OPERATIVE PREVALENCE OF ED IN PATIENTS WITH AAA

Several studies have addressed the prevalence of ED in men with AAA before surgical intervention and revealed pre-operative rates ranging from 10.3% to 74% (Tables 1 and 2).^{13–21} When the population was subdivided according to surgical technique, pre-operative ED rate varied from 10.3% to 66% in patients who had open surgical repair,^{13,14,16–19} from 11.4% to 74% in patients who had EVAR,^{15–20} and was estimated at 45% in patients with ruptured AAA who had open repair.¹⁸ The absence of uniformity among studies could be attributed to different factors. First, study design was different, some series being retrospective and single centre, others being prospective or multicentre. Second, AAA often develops in ageing patients and is associated with atherosclerosis and corresponding cardiovascular risk factors.² The mean age and prevalence of cardiovascular risk factors were slightly different among studies and as these conditions are linked with ED, it could have contributed to explain discrepancy among the reported data.¹⁰ Moreover, the methodology used to assess ED differed widely. The majority of studies used various specific questionnaires to assess SD and its impact on quality of life including the International Index of Erectile Function (IIEF), the Cologne assessment of ED (KEED), the Marquis test, the Sexual Health Inventory for Men (SHIM), the Standard set of life quality (SF 12) or the Sexual quality of life (Sexual QoL). When necessary, questionnaires could be complemented by additional questions. The collection of data was also made by

interview, and a few studies directly evaluated ED based on medical records. Even if results were heterogeneous, the prevalence of ED in patients with AAA is comparable with rates of ED observed in patients with other cardiovascular diseases. The prevalence of ED in patients with coronary heart disease has been estimated at between 47% and 75%.^{22,23} As ED and cardiovascular diseases share similar risk factors related to atherosclerosis,²⁴ it is not surprising that the prevalence of ED was comparable between patients with AAA and patients with coronary artery disease.

POST-OPERATIVE ED AFTER AAA SURGICAL REPAIR

Post-operative ED prevalence and de novo incidence

Several studies have addressed the impact of AAA surgical treatment and reported ED prevalence. The post-operative ED prevalence was evaluated at different time points following surgical intervention (from 3 weeks to 36 months) and varied from 7.4% to 79% following open repair,^{16,18,19,25} and from 4.7% to 82% following EVAR.^{16,18,19,25} However, to assess the direct impact of surgical treatment on ED, it should be taken in consideration that some patients may already suffer from ED pre-operatively. The incidence of de novo ED was evaluated and heterogeneous results were found, with rates estimated at 20%, 26.6%, and 83% after open repair^{14,16,26} and at 11% and 14.3% after EVAR.^{16,26} The absence of uniformity among studies could be attributed to differences in methodology used including the study design, the number of patients, and the criteria used to evaluate ED.

Besides, ED was assessed at different time points post-operatively and some patients may recover, as revealed by the observation of a return to the pre-operative level of sexual functioning three months after open repair and EVAR.¹⁹

Impact of surgical technique on ED

When comparing the impact of surgical techniques, inconsistent results were observed. Some authors did not find any significant difference of ED prevalence and de novo post-operative ED incidence between open repair and EVAR.^{16,25} This is corroborated by another study which did not find any significant difference of International Index of Erectile Function (IIEF-5) scores between patients who had open repair and EVAR surgery.¹⁷ However, other studies highlighted differences between the open and EVAR groups. Some found a significantly greater increase in the post-operative prevalence of SD in the open repair group compared with EVAR, with a decrease of ED and orgasmic function scores.^{18,27} On the contrary, others observed a tendency towards a more pronounced increase of SD in an EVAR group,¹⁹ with a significant impairment in the quality of erection.²⁸

While the majority of studies directly compared open surgery with EVAR, some went further and provided a detailed analysis of the impact of specific procedures in

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