NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

INTERVENTIONAL PROCEDURES PROGRAMME

382 – Laparoscopic repair of abdominal aortic aneurysm
Comments table

IPAC date: Thursday 14th June 2007

Comment no.	Consultee name and organisation	Sect. no.	Comments	Response Please respond to all comments
1.	Specialist Adviser	**1**	Agreed	Noted, thank you.
2.	Individual Clinician	**1**	*Provisional recommendations* - essentially we are in total agreement with the provisional recommendations, but we felt that mentorship should be considered. As laparoscopic aneurysm surgery is a complex procedure a period of mentorship would be appropriate in a similar way to laparoscopic colorectal surgery. Following a period of mentorship, it may be appropriate for two surgeons to work together at least in the initial stages.	Committee added '…and are mentored in these techniques' to section 1.5.
3.	Individual Clinician	**2**	*Outline of the procedure* – laparoscopic aortic surgery could broadly be divided into laparoscopic aorto bi-femoral surgery and laparoscopic aortic aneurysm surgery. Laparoscopic aorto bi-femoral surgery may be considered less demanding than aortic aneurysm surgery when performed totally laparoscopic ally. Laparoscopic surgery for aortic aneurysm surgery has effectively three different types of procedure. a. Laparoscopically assisted aortic aneurysm surgery. b. HALS (hand assisted laparoscopic surgery) c. Totally laparoscopic aortic aneurysm surgery. Very few procedures are carried out totally retroperitoneally but the majority are carried out transperitoneally combined with a retro-renal or a retro-colic approach and at times an anterior transperitoneal approach. The majority of total laparoscopic	The Committee reworded the description section to describe the laparoscopic approaches. Description of approach is too much detail for this brief section of the guidance.

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			aortic aneurysm surgery is carried out transperitoneally through the retro-renal or retro-colic approach. Surgery may be staged to improve safety. The aorta may be dissected totally laparoscopically with clipping of the inferior mesenteric arteries and lumbar arteries prior to placement of the infra-renal aortic clamp and the common iliac clamps depending on the difficulty of each case. The anastomosis can be carried out through a planned small abdominal incision or could be carried out laparoscopically. To minimise aortic cross clamp time, the upper anastomosis may be carried out laparoscopically and the lower anastomosis through a small open incision. Furthermore if there are aorto bi-iliac aneurysms again a planned laparoscopic dissection may be combined with a lower abdominal incision to perform the iliac anastomosis. The lumbar arteries can be sutured from the inside of the sac but usually the arteries are clipped as they leave the aneurysm on the outside. As a retro-renal or retro-colic approach is standard in laparoscopic aneurysm surgery it is not always necessary to close the aneurysm wall or the posterior parietal peritoneum. If an anterior trans-peritoneal approach is performed then the sac would be closed.	Description of approach is too much detail for this brief section of the guidance.
4.	Specialist Adviser	**2.1**	Yes	Noted, thank you.
5.	Specialist Adviser	**2.2**	It is very important to distinguish between HALS and the full laparoscopic procedure. The skills required for the latter are much greater.	The Committee reworded the description section to describe the laparoscopic approaches.

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6.	Health Economist	**2.3**	Focusing only on short term (30 days post-intervention) is likely to overstate the efficacy of the procedure. It is necessary to also consider longer term outcomes like overall survival, death of cardiovascular origin in order to assess the relative advantage of the laparoscopic procedure. A main problem is the selection of patients which is not the same for open versus laparoscopic procedure.	Agree that long term outcomes would be preferred but these have not as yet been published. Section 1.4 of the guidance says that "Selection of patients should be performed by a multidisciplinary team experienced in the management of aortic aneurysms and able to offer alternative treatment options."
7.	Specialist Adviser	**2.3**	Agreed	Noted, thank you.
8.	Individual Clinician	**2.3**	*Efficacy* – there is no doubt that laparoscopic procedures take longer than open procedures but with increasing experience there is evidence to show that operating time is reduced. In our limited series, the operating time is between five to six hours.	Section 2.3.4 describes data that demonstrates a learning curve in terms of operative time.
9.	Individual Clinician	**2.3.3**	In our small series of laparoscopic surgery for aneurysm and aorto-iliac disease, our median post operative length of stay is three days.	This is broadly in line with the outcomes in the published literature.
10.	Individual Clinician	**2.3.4**	When we look at efficacy outcomes one has to be careful in selecting open conversion as an outcome criteria. When we carry out laparoscopic cholecystectomy, it is appropriate to warn the patient that it may be necessary to open the abdomen to carry out the procedure safely. A similar philosophy should apply in laparoscopic aortic surgery. The incision would be only a fraction of the size of incision used for open procedures but the patient would have similar benefits in reducing morbidity, reducing post operative length of stay and speeding up the time to normal bowel function.	Section 1.2 of the guidance states that patients should be informed of the place of the procedure in the elective treatment of abdominal aortic aneurysm, and told that conversion to open surgery may be necessary.

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11.	Health Economist	**2.4**	Longer term safety needs to be documented including longer term reintervention rates for displaced or other stent complications (rupture, fracture etc..) and the imaging modalities of lifelong? surveillance as stents are typically inserted in high-risk patients with relatively low or moderate life-expectancy.	Noted, thank you.
12.	Individual Clinician	**2.4**	*Safety* – todate we have had no early or late deaths.	Noted, thank you.
13.	Health Economist	**2.5**	Short and specially long term efficacy depends on the type and even brand of stents used with more recent stents having possibly better results and cumulative surgeon expertise The literature review (even rapid) is far too limited, several meta-analyses , RCT"s and Health Technology Reviews have been published in recent years	Noted, thank you.
14.	Individual Clinician	**2.5**	I have been asked to provide information concerning laparoscopic aortic surgery. I do not have personal clinical experience with laparoscopic aortic aneurysm repair but I do have personal clinical experience with laparoscopic aortobifemoral bypass for aortoiliac occlusive disease. I am certain that laparoscopic procedures will be of benefit for some patients with aortoiliac occlusive disease and for treatment of Type II endoleaks following EVAR.	Noted, thank you.
15.	Specialist Adviser	**2.5**	I wonder whether HALS and the totally laparoscopic procedure should be considered separately. When this guidance was started only the full laparoscopic procedure was considered. HALS has come along since. There are no other areas of surgery where hand assisted laparoscopy has persisted - all have become fully laparoscopic with increasing expertise.	We considered whether these two sub-techniques should be considered separately but decided that there was insufficient potential difference in the safety and efficacy profiles to make this necessary.
16.	Individual Clinician	**2.5**	*Other comments* – we have eluded to the techniques in the above section.	Noted, thank you.
17.	Individual Clinician	**General**	*Comments on Specialists Advisors Opinions* It is true to say that laparoscopic aortic surgery is a novel	The views expressed are the opinions of

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			approach in this country and it is quite clear that we are behind the Europeans, Canadians and Americans regarding this procedure. I feel the proposed benefit of the procedure is not always try to complete a repair of the aorta avoiding the need for open surgery but to attempt to reduce the degree of trauma associated with the long abdominal incision for aortic aneurysm repair and aortic by-pass surgery (this procedure may be carried out by 6-8 1cm cuts with or without a 6cm lower abdominal cut). This will inevitably lead to reduced the length of stay in hospital and speed recovery. The appropriate laparoscopic equipment must be available but this is not expensive as all hospitals have laparoscopic facilities available and only limited additional equipment eg vascular clamps are required. Laparoscopic aortic surgery is cheaper than both open and endovascular surgery. Lack of training in laparoscopic vascular surgery was highlighted as a potential problem by the advisors. This is presently the case. Mentorship from abroad is feasible and it may well be that the surgeons most suited to carry out this procedure would be those that are carrying out vascular surgery and other common laparoscopic procedures. Our unit has the background of performing trans-thoracic endoscopic sympathectomy since the mid 1980's, laparoscopic hernia repairs both TEP and TAPPS (approximately 250 per year), laparoscopic cholecystectomy and laparoscopic incisional and para umbilical hernia repairs. Many vascular surgeons in the country have combined their vascular work with hernia repair work and a significant number of vascular surgeons are carrying laparoscopic hernia repairs.	advisers nominated by the relevant specialist societies described in the overview for this procedure

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			Issues for consideration by IPAC – The IPAC is considering the variation in techniques. Robotically assisted procedures are extremely rare at this point in time but may develop in the future. The techniques we have essentially highlighted above are (1) laparoscopically assisted surgery (2) HALS and (3) totally laparoscopic aortic surgery. References - In my opinion the world experts on laparoscopic aortic surgery are Dion from Quebec, Coggia from Paris, Kolvenbach from Dusseldorf, Alimi from Marseille, Ferrari from Italy and Gracia from Los Angeles. I enclose a reference list in the appendix. **In Summary** Our unit feels that laparoscopic aortic surgery does need further careful evaluation in this country. Whilst open surgery is the goal standard at present, endo-vascular procedures are being pursued but its durability is still in question and long term results are necessary before we are able to confirm that the method of endo-vascular repair is a successful prophylactic procedure. Furthermore only 40 to 50% of all aneurysms are amenable to endo-vascular surgery. Since open surgery has got significant draw backs, it would beneficial for centres in this country to provide minimally invasive aortic surgery in the form of laparoscopic surgery as long as we can match the results obtained in Europe and North America. ***References up to 2005*** Alimi YS, Hartung O Valerio N, Juhan C: Laparoscopic aortoiliac surgery for aneurysm and occlusive disease: When should a mini-laparotomy be performed. J Vasc Surg 2001; 33: 469-475	There is considerable variation in technique between the studies identified in the literature. One study listed in appendix A of the overview includes cases treated with robotic assistance. It is not the policy of the NICE interventional Procedures programme to consider robotic surgery as a separate procedure, unless there are technical aspects of the operation that could not possibly be undertaken by hand or laparoscopic surgery. Thank you for identifying these references. Thank you for your comment. The recommendations made in our guidance support the need for further auditing of this procedure. Data from Alimi (2003) included in appendix A

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			Alimi Ys, MD Di Molfetta L, Hartung O, Dhanis AF, Barthelemy P, Aissi K, Giorgi R, Juhan C: Laparoscopy-assisted abdominal aortic aneurysm endoaneurysmorraphy: Early and mid-term results. J Vasc Surg 2003; 37: 744-749	Included in appendix A
			Baum R Carpenter J, Golden MA: Treatment of type 2 endoleaks after endovascular repair of abdominal aortic aneurysms: Comparison of transarterial and translumbar techniques. J Vasc Surg 2002; 35: 23-29	Found in literature search
			Castronuovo JJ, James KV, Resnikoff M, Mc Lean ER, Edoga JK: Laparoscopic assisted abdominal aortic aneurysmectomy. J Vasc Surg. 2000; 32: 224- 233	Included in table 2
			Coggia M, Bourriez A, Javerliat I, Goeau-Brissonniere O: Totally laparoscopic aortobifemoral bypass: a new and simplified approach. Eur J Vasc Endovasc Surg. 2002 Sep; 24 (3): 274-275	Data from Coggia (2004) included in appendix A
			Coggia et al Total laparoscopic bypass for aortoiliac occlusive lesions: 93-case experience. J Vasc Surg 2004 40 899-906	Data from Coggia (2004) included in appendix A
			Coggia M, Javerliat I, Di Centa I, Colacchio G, Cereau P, Kitzis M, Goeau-Brissonniere OA. J Vasc Surg 2004 40 448-454	Included in appendix A
			Coggia at al Total laparoscopic aortic surgery: Transperitoneal left retrorenal approach. Eur J Vasc Endovasc Surg 2004;28:619-622.	Data from Coggia (2004) included in appendix A
			Coggia et al Total laparoscopic infrarenal aortic aneurysm repair:preliminary results. J Vasc Surg 2004;40:448-54.	Included in appendix A

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			Da Silva, Kilvenbach R, Pinter L: The feasibility of hand-assisted laparoscopic bypass using a low transverse incision. Surg Endosc 2002; 16: 173-176	Same patients as in Kolvenbach (2001)
			De Donato et al Current role of the minimally invasive direct aortic surgery for 3-A repair (MIDAS-3A). Chir Ital 2003;55:625-36.	Minimally invasive not necessarily laparoscopic intervention
			De Donato et al Current role of the minimally invasive direct aortic surgery for 3-A repair (MIDAS-3A). Chir Ital 2003;55:625-36.	Minimally invasive not necessarily laparoscopic intervention
			Dion YM Gracia CR, El Kadi H: Totally laparoscopic abdominal aortic aneurysm repair. J Vasc Surg 2001; 33: 181-185	Single case report
			Dion YM, Gracia CR: A new technique for laparoscopic aortobifemoral graft in occlusive aortoiliac disease. J Vasc Surg 1997; 26: 685-692	Technical description, no clinical outcomes, indication was not abdominal aortic aneurysm
			Dion YM, Katkhouda N, Rouleau C, Aucoin A: Laparoscopy-assisted aortobifemoral bypass. Surg Laparosc Endosc 1993; 3: 425-429	Single case report, indication was not aortic abdominal aneurysm
			Dion YM, Thaveau F, Fearn S: Current modifications to totally laparoscopic “apron technique”. J Vasc Surg. 2003; 38: 403-406	Technical description, no clinical outcomes,
			Dion YM History in perspectives in laparoscopic vascular surgery. Acta chir belg, 2004, 104, 493-498	Review paper
			Edoga JK, Asgarian K, Sing D, Romanelli J et al: Laparoscopic surgery for abdominal aortic aneurysms: technical elements of the procedure and a preliminary report of the first 22 patients.	Included in table 2

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			Surg Endosc 1998; 12: 1064-1072	
			Edoga JK, Asgarian K, Singh D, James KV et al: Laparoscopic surgery for abdominal aortic aneurysm: technical elements of the procedure and a preliminary report of the first 22 patients. Surg Endosc 1998; 12: 1064-1072	Included in table 2
			Giulianotti P, Coratti A, Angelini M, Sbrana F et al: Robotics in General Surgery. Arch Surg 2003; 138: 777-784	Not all abdominal aortic aneurysm repair
			Jobe BA. Duncan W, Swanstrom LI. Totally laparoscopic abdominal aortic aneurysm repair. Surg Endosc 1999 Jan: 13 (1) 77-79	Single case report
			Kolvenbach R, Ceshire N, Pinter L, Da Silva L, Deling O, Kasper AS: Laparoscopy-assisted aneurysm resection as a minimal invasive alternative in patients unsuitable for endovascular surgery. J Vasc Surg 2001; 34: 216-221	Included in table 2
			Kolvenbach R, Da Silva L, Schwierz E, Deling O: Video assisted aortic surgery. J Am Coll Surg. 2000 190: 451-457	Same patients as in Kolvenbach (2001)
			Kolvenbach R, Deling O, Schwierz E, Landers B : Reducing the operative trauma in aortoiliac reconstructions – a prospective study to evaluate the role of a video-assisted vascular surgery. European Journal of Vascular and Endovascular Surgery 1998; 15, 483-488	Indication was not aortic abdominal aneurysm
			Kolvenback R, Pinter L, Raghunandan M et al: Laparoscopic remodeling of abdominal aortic aneurysms after endovascular exclusion: a technical description. J Vasc Surg. 2002; 36: 1267-1270	Technical description, no clinical outcomes

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			Kolvenbach R, Schwierz E: Combined endovascular/laparoscopic approach to aortic pseudoaneurysm repair. J Endovasc Surg. 1998; 5: 191-193	Not standard laparoscopic intervention
			Kolvenbach R: Hand-assisted laparoscopic abdominal aortic aneurysm repair. Sem Laparosc Surgery 2001; 8: 168-177	Included in table 2
			Kolvenbach R: Hand-assisted laparoscopic aortoiliac surgery. Arch Surg. 2000; 135 (7): 875	Letter
			Kolvenbach et al. Total laparoscopically and robotically assisted aortic aneurysm surgery. A critical evaluation. J Vasc Surg 2004 39 771-776	Same patients as in Kolvenbach (2006)
			Kolvenbach. A consecutive series of 180 patients having total laparoscopic aortic aneurysm repairs. Unpublished data 2005.	Unpublished report
			Piergiorgio C, Verzini F, Zannetti S. et al: Device migration after endoluminal abdominal aortic aneurysm repair: Analysis of 113 cases with a minimum follow up period of 2 years. J Vasc Surg 2002; 35: 229-235	Not standard laparoscopic intervention
			The Hals Study Group: Hand-assisted laparoscopic surgery with the HandPort system. Ann Surg 2000; 231, 5: 715-723	Indication was not aortic abdominal aneurysm in all patients, and not analysed separately.
			Veith F. et al: Nature and significance of endoleaks and endotension: Summary of opinions expressed at an international conference. J Vasc Surg 2002; 35: 1029-1035	Technical description, no clinical outcomes
			White GH, YU W, May J et al: Endoleak as a complication of endoluminal grafting of abdominal aortic aneurysms. Classification, incidence, diagnosis and management. J Endovasc Surg 1997; 4: 152-168	Not standard laparoscopic intervention

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			Wisselink W, Cuesta Am, Berends FJ et al: Retroperitoneal endoscopic ligation of lumbar and inferior mesenteric arteries as a treatment of persistent endoleak after endoluminal aortic aneurysm repair. J Vasc Surg 2000; 41: 1240-1244 Wisselink W, Cuesta M, Gracia C, Rauwerda J: Robot-assisted laparoscopic aortobifemoral bypass for aortoiliac occlusive disease: A report of two cases. J Vasc Surg 2002; 36:1079-1082	Not standard laparoscopic intervention Indication was not aortic abdominal aneurysm