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AAA ELECTIVE TREATMENT INDICATION TACTICS IN EVAR ERA

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The authors describe their indication tactics for AAA elective treatment. Based on one-month morbidity and mortality they evaluate the results obtained in the past six years and compare the methods of open surgery, endovascular repair and combined strategy in AAAs elective repair.

INTRODUCTION

All infrarenal abdominal aortic aneurysms (AAAs) should be indicated for elective treatment. Active approach to AAA is based on its fatal prognosis and high difference between sad urgent and acceptable elective repair mortality[1–7]. In order to provide acceptable results, the risk of the elective repair has to be significantly lower than the risk of AAA rupture[7, 8]. Open surgery (OS) has remained the standard of care in AAA elective treatment[9]. During the last decade, endovascular stentgrafting (EVAR) highly influenced the indications for AAA elective treatment[10–12]. This miniinvasive and hemodynamically less loading method has extended the elective treatment posibilities of AAA patients who show a high operating risk and are unfit for open surgery[13–15]. Another AAA treatment possibility, based on primary association of both of the previous methods, is the combined strategy (CS) for AAA of complicated morphology for EVAR[16] (Fig. 1). The type of AAA repair is determined by the patient's individual operating risk first of all[1].

METHOD

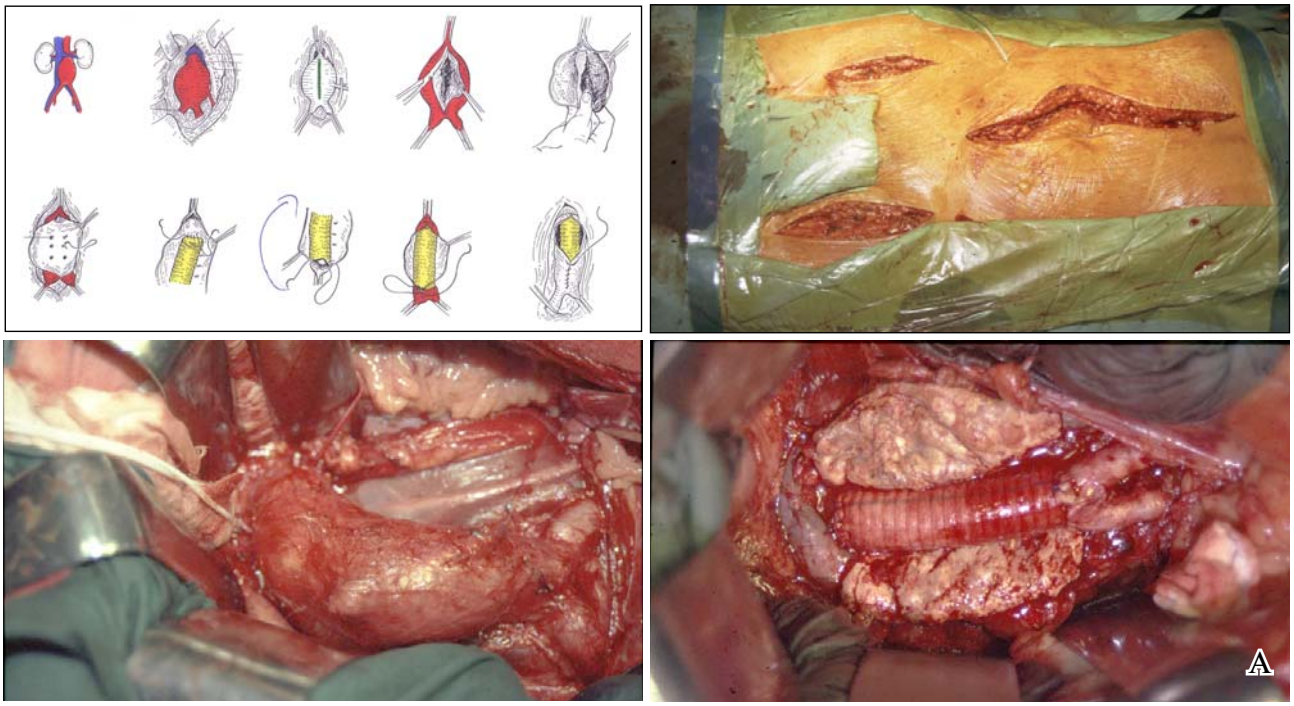
From April 1996 to September 2002 we investigated 304 patients with asymptomatic AAA (Table 1.). Open surgery was indicated in 115 patients (n = 38 %), 128 patients (n = 43 %) were treated endovascularly[16–20]. Indication for elective treatment and the way of repair were determined according to patients' life expectancy, condition (ASA classification) and AAA morphlogy analyses[7, 8, 21–23] (Fig. 2). Low operating risk patients (ASA II) (n = 105) were mostly indicated directly for OS (n = 87), only some of them with suitable AAA morphology were considered for EVAR (n = 18). High operating risk patients (ASA III, IV) (n = 169) were primarily evaluated according to AAA morphology. Those with suitable AAA morphology for EVAR were treated endovascularly (n = 85). Patients with less suitable AAA morphology, but not so unfit, were indicated for OS (n = 28), unfit patients were treated by combined endovascular/surgical approach (CS) (n = 25, 23 %) (Table 2.). 31 unfit patients with totally unsuitable AAA morphology (n = 10 %) were observed and indicated only for urgent OS during the time (n = 11). 30 low life expectancy patients (n = 9 %) were primarily excluded from indication for elective AAA treatment.

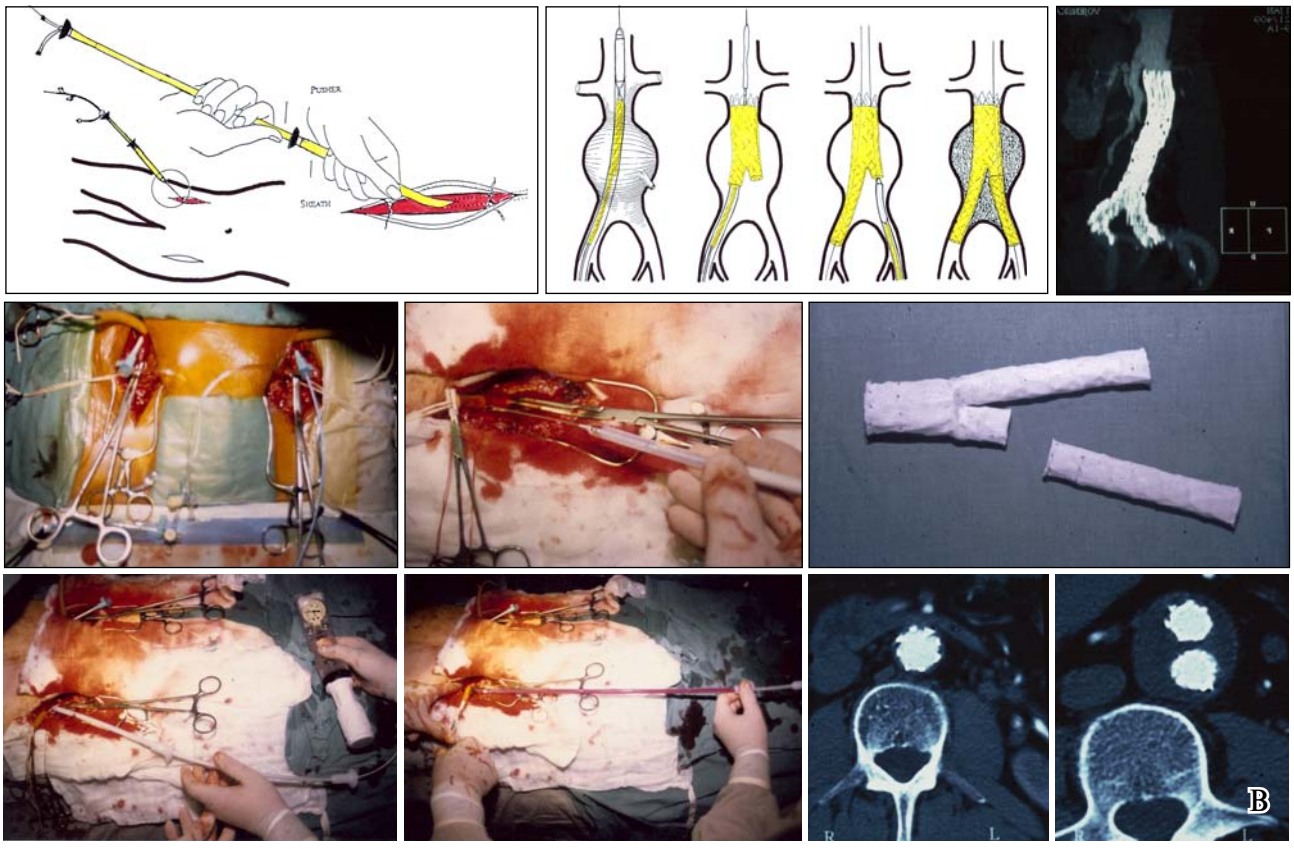
RESULTS

Technical success was 100 % in the OS and CS groups. In the EVAR group, primary technical success of 91% was achieved, secondary – assisted-technical success was 98.3 %[1]. There were no severe technical-surgical complications in any of the groups. The rate of cardiac and pulmonary complications was higher in the OS group (n = 14.7 %) versus the EVAR group (n = 7.5 %) (Table 3.). One-month mortality of 4.1 % (n = 10) in all treated groups was related to concomitant diseases. It was 5.2 % (n = 6) in the OS group and 3.1 % (n = 4) in the EVAR group. In the ASA III group it was 14.2 % for OS versus 2.8 % for the EVAR group (Table 4.). In the observed group, 35 % of the patients needed urgent surgery (mortality of 75 %). 80 % of low life expectancy untreated patients died of concomitant diseases within six months.

DISCUSSION

All patients with suspected AAA should be investigated and all patients with proved AAA should be evaluated in terms of repair indication. The basic condition for indicating AAA patiens for elective treatment is their life expectancy and the patient's individual operating risk arising from the particular type of repair[2–4, 7, 8]. The risk of AAA rupture should be higher than the risk of death of concomitant diseases during the time or during the postoperative period[7, 8]. Contraindications for elective repair are mostly relative; AAA repair is absolutely contraindicated in patients with life expectancy below one year[8]. At present, classical open surgery (OS), endovas-





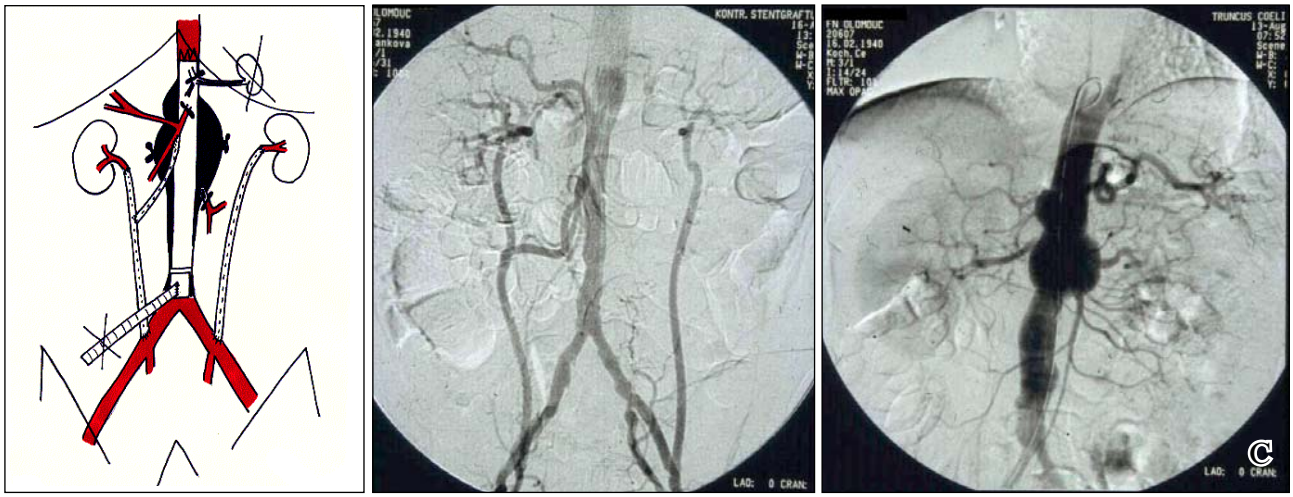


Fig. 1. AAA elective treatment possibilities at present: A: Open surgery, B: EVAR, C: Combined strategy

cular repair (EVAR) and combined strategy (CS) are the three possibilities of AAA repair (Fig. 1). Observation does not mean "no treatment". It is waiting for the right timing of repair, when the risk of rupture will be higher than the risk of repair. Elective OS has acceptable morbidity (10–15 %) and mortality (2–8 %) but only in fit patients (ASA II). Hemodynamically loading aortal clamping and invasivity significantly increase the morbidity (40 %) and mortality (19 %) rates in high operating risk patients (ASA III, IV)[6, 13–15]. These patients comprise a significant portion of AAA patients. Therefore, the hemodynamically less loading and miniinvasive EVAR, with acceptable mortality also in high operating risk patients (4.7 %), has come into focus in the last decade[12–15]. Unfortunately, EVAR has technical limitations caused by the present stent-graft system construction and the indication depends on AAA morphology. Not all AAAs could be endovascularly treated[21–23]. That is why all questions in preoperative decision as to the type of treatment are connected with the patient risk and AAA morphology. The advantages of both methods are combined and the disadvantages eliminated in CS[16] (Fig. 2). The use of these endovascular techniques (EVAR and CS) seems to be the reason why only 10 % of the patients are rejected from the group of AAA patients with tendency to treat.

Low operating risk AAA patients indicated for EVAR were the following: patients after repeated laparotomies, before another severe and complicated surgery of the abdominal cavity, young men with the need of preaortic vegetative plex saving (sexual dysfunction prevention). The best comparision of OS and EVAR mortality and morbidity rates is in the ASA III group of AAA patients and also when we compare OS in ASA II versus EVAR in the ASA III group[13–15, 24–26]. The increased invasiveness of the combined strategy associated with additional open surgery leads to higher, yet acceptable morbitidy. We have to underline that it is mostly patients of high operating risk that are treated endovascularly.

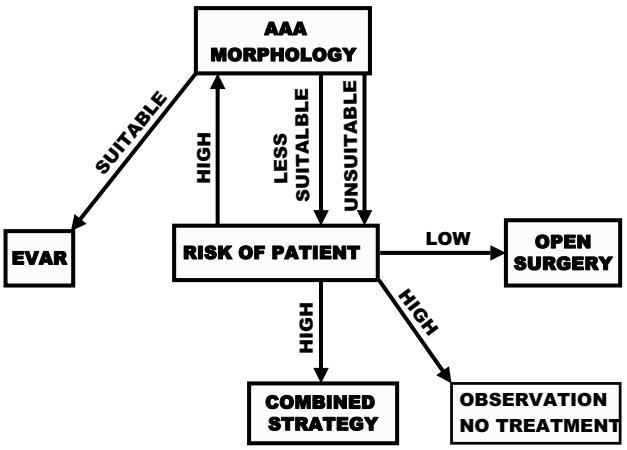


Fig. 2. AAA patients (with good life expectancy) elective indication tactics

CONCLUSION

All our results may be successfully compared to the results published by other clinics.

Based on the evaluation of our indication tactics of AAA elective treatment according to one-month results, we can confirm:

The endovascular approach is of principal significance for successful AAA elective treatment in high operating risk patients (ASA III, IV). The combined strategy is the method of choice in the morphologicaly complicated AAA repair in these patients. Classical open surgery is recomended in low operating risk patients (ASA II) only.

Table 1. Indication of AAA patients for elective treatment
April 1996 – September 2002

INVESTIGATED			304	100 %
INDICATED FOR ELECTIVE TREATMENT ↑ life expectancy			274	91%
TREATED			243	80 %
SURGERY	115	47 %		
EVAR	128	53 %		
CS	25	10 %		
OBSERVED ↑ high operating risk ↓ AAA morphology			31	10 %
NOT TREATED ↓ life expectancy			30	9 %

Table 2. Indication of AAA patients for elective treatment
Type of repair according to patients operating risk

PATIENTS	SURGERY	EVAR	CS
243	115	128	
ASA II	83 %	17 %	
105	87	18	
ASA III	28 %	72 %	
98	28	70	10/14%
ASA IV	–	100 %	
40	–	40	15/38%

Table 3. AAA elective treatment
– 30 days morbidity – cardiac and pulmonary
Surgery in comparision to EVAR according to patients operating risk

PATIENTS	SURGERY	EVAR	CS
ASA II 8/105	8/87	0/18	
7.6 %	9 %	0 %	
ASA III 14/98	9/28	5/70	2/10
14.2 %	32 %	7 %	50%
ASA IV 4/40	–	4/40	3/15
10 %		10 %	20%
26/243	17/115	9/128	5/25
10.6 %	14.7 %	7.5 %	20%

Table 4. AAA elective treatment – 30 days mortality
Surgery in comparision to EVAR according to patients operating risk

PATIENTS	SURGERY	EVAR	CS
ASA II 3/105	3/87	0/18	
2.8 %	3.4 %	0 %	
ASA III 5/98	4/28	2/70	–
5.1 %	14.2 %	2.8 %	
ASA IV 2/40	–	2/40	–
5 %		5 %	
10/243	6/115	4/128	–
4.1 %	5.2 %	3.1 %	

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