

## Long-term results of open repair of popliteal artery aneurysm



M.U. Wagenhäuser\*, K.B. Herma<sup>1</sup>, T.A. Sagban<sup>1</sup>, P. Dueppers<sup>1</sup>, H. Schelzig<sup>1</sup>, M. Duran<sup>1</sup>

Department of Vascular and Endovascular Surgery, University Hospital Düsseldorf, Germany, Moorenstraße. 5, 40225 Düsseldorf, Germany

### HIGHLIGHTS

- 30 day Primary patency rate: 100% asymptomatic legs; 92% for symptomatic legs.
- Better life quality for asymptomatic legs in the follow-up.
- Better ankle-brachial index for asymptomatic legs on control examination.

### ARTICLE INFO

#### Article history:

Received 25 November 2014  
Received in revised form  
27 January 2015  
Accepted 31 January 2015

#### Keywords:

Popliteal artery aneurysm  
Open surgical repair  
Medial approach  
Aneurysm

### ABSTRACT

**Introduction:** Popliteal artery aneurysms (PAA) are rare. Different surgical techniques for open surgical repair are possible. This study presents a single centre experience using open surgical repair with a medial approach (MA) and outlines differences between symptomatic (SLS) and asymptomatic (ALS) legs.

**Methods:** Data collection was performed retrospectively. The investigation period was from 1 January 1996 to 1 January 2013. Patients presented in the Outpatient Department and received a questionnaire concerning their quality of life. Data are presented as mean  $\pm$  standard deviation. Mann–Whitney test and Cochran–Armitage test for trend was used for data analysis. Kaplan–Meier method was used to calculate limb salvage rates.  $p < 0.05$  was considered statistically significant.

**Results:** We analyzed 16 ALS and 26 SLS with an average age of  $63.5 \pm 10$  years. Preoperative ankle-brachial index (ABI) was  $1.0 \pm 0.2$  for ALS (on control examination:  $1.12 \pm 0.24$ ) and  $0.08 \pm 0.18$  for SLS (on control examination  $0.94 \pm 0.14$ ) ( $p < 0.05$ ). Limb salvage rate was 100% for ALS and 86.7% for SLS (overall 93.3%). Primary patency rate for SLS was 85%, for ALS rate of 100%, respectively (overall 92.5%). ALS reached an average of  $13.1 \pm 2.7$  points (SLS  $11.4 \pm 2.8$ ) on a numeric point scale.

**Conclusion:** Open surgery is therapy and prevention of acute ischaemia all in one, especially for asymptomatic patients and delivers good long-term results. Endovascular therapies offer an alternative but long-term results are pending. Open surgery should still be considered as a gold standard therapy.

© 2015 The Authors. Published by Elsevier Ltd on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Popliteal artery aneurysm (PAA) constitutes a rare disease in the general population; however, it is the most common peripheral aneurysm [1]. Its prevalence is about 1%, and patients are almost

exclusively men of an age between 65 and 80 years [2]. Although rare and mostly asymptomatic, up to 20% of affected patients present acute symptoms [3]. The occurrence of symptoms may indicate severe complications. Thus, peripheral embolism, local aneurysm thrombosis and free aneurysm rupture are consequent pathologies. Resulting critical limb ischaemia has a poor prognosis with an amputation rate of about 15% [4,5].

Open operative and endovascular therapy are common therapeutic options for patients with PAA today. Interventional approaches are frequently used for aneurysms in different locations [6,7]. The first report of successful interventional therapy for PAA was published in 1994 and since new stents have been developed, as the flexible knee joint segment of the popliteal artery has special mechanical demands [8]. The method is more frequently used,

\* Corresponding author. Tel.: +49 (0)211 81 07159, +49 (0)211 81 17445; fax: +49 (0)211 81 19091.

E-mail addresses: [markus.wagenhaeuser@med.uni-duesseldorf.de](mailto:markus.wagenhaeuser@med.uni-duesseldorf.de) (M.U. Wagenhäuser), [katharina.herma@med.uni-duesseldorf.de](mailto:katharina.herma@med.uni-duesseldorf.de) (K.B. Herma), [drsagban@yahoo.de](mailto:drsagban@yahoo.de) (T.A. Sagban), [philip.dueppers@med.uni-duesseldorf.de](mailto:philip.dueppers@med.uni-duesseldorf.de) (P. Dueppers), [hubert.schelzig@med.uni-duesseldorf.de](mailto:hubert.schelzig@med.uni-duesseldorf.de) (H. Schelzig), [mansur.duran@med.uni-duesseldorf.de](mailto:mansur.duran@med.uni-duesseldorf.de) (M. Duran).

<sup>1</sup> Tel.: +49 (0)211 81 17090; fax: +49 (0)211 81 19091.

indicated by an increasing number of reports within the last years [9–12]. However, there is no consensus on a standardized approach so far. To date, most hospitals consider localized expansion over 20 mm in diameter or 150% of the normal vessel diameter with proximal and distal healthy vessels as indicators for operative or endovascular treatment [13,14].

Concerning open surgical repair, different operation techniques and approaches are described in the literature. Two alternative approaches, which are both equally popular, are the medial approach (MA) with the patient in the supine position and the posterior approach (PA) with the patient in the prone position [15,16]. Fig. 1 illustrates the operation situs using an MA and a sliced PAA after excision. Surgical solutions include a bypass with anastomoses in an end-to-side fashion or an interponate with an end-to-end anastomosis. Alternatively, an incision of the aneurysm sac, consecutive creation of an interponate with an end-to-end anastomosis and secondary coverage by re-closure of the aneurysm sac may be performed [17]. Results after surgical repair are interesting, especially in comparison to endovascular therapies, and should help with offering the best treatment for patients.

This study analyses data of patients with a PAA who underwent open surgical repair. It outlines long-term results and patients' life quality after open surgical repair of asymptomatic and symptomatic PAA. Moreover, it compares the results with data after endovascular treatment drawn from the literature.

## 2. Methods

### 2.1. Data collection

Retrospective data analysis was approved by the review board of the University of Düsseldorf (4856). All patients gave their informed consent prior to the analysis. Data were analyzed retrospectively. A review of these data was conducted including 30 patients at an average age of  $63.5 \pm 10$  years, who were treated for PAAs from 1 January 1996 to 1 January 2013 at the Department of Vascular and Endovascular Surgery at the University Hospital Düsseldorf. Twelve patients underwent open surgery for both legs due to co-existing contralateral PAA. Operations were performed by senior surgeons and an MA with saphenous vein graft interposition was conducted. Thus, aneurysms were completely removed. Alternatively, a saphenous vein bypass was performed and the PAA was ligated. During the operation the aneurysm was assessed and allocated to one of the following subgroups: thrombosed, embolized, plain aneurysmatic and concomitant inflammatory reaction. Patients' characteristics and data of the in-hospital stay were analyzed from archived medical records (Table 1).

**Table 1**  
Characteristics of the patient cohort.

	Frequency ALS <i>n</i> = 11 (%)	Frequency SLS <i>n</i> = 19 (%)
<i>Gender</i>		
Male	10 (91)	18 (95)
Female	1 (9)	1 (5)
<i>Risk factors</i>		
Hypertension	8 (73)	13 (68)
Dyslipoproteinemia	4 (36)	12 (63)
Smoking	5 (45)	10 (52)
Adipositas (BMI > 30 kg/m <sup>2</sup> )	2 (18)	8 (42)
<i>Additional aneurysms</i>		
Abdominal aorta	5 (45)	9 (47)
Contralateral popliteal artery	9 (82)	11 (58)
Iliac artery	1 (9)	0 (0)
Visceral arteries	1 (9)	0 (0)

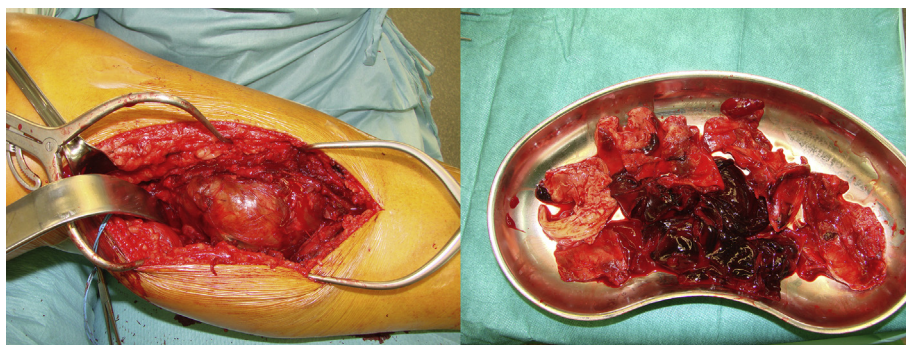
### 2.2. Control examination and assessment of the quality of life

The rest of the data were collected prospectively. Patients were invited to present in our outpatients' department for control examination. Fifteen patients presented in the outpatients department and seven patients were examined by their general practitioner, and the results were transmitted to our department. Two patients did not present and six patients have died in the meantime. Here, results from older control examinations were used for analysis. For control examinations anamnesis and physical examination were performed, followed by calculation of the ankle-brachial-index (ABI) and a duplex sonography (Toshiba Xario). Thus, the streaming profile and the maximum diameter were assessed.

Together with the invitation, patients received a questionnaire to consider the psychosocial outcome. We developed a questionnaire with six questions concerning current physical condition, pain, self-confidence and viability. The questions could be answered as follows: 0 = very unsatisfied 1 = not satisfied, 2 = satisfied, 3 = very satisfied. Points were added up and results were interpreted as follows: 0–3 points: very bad quality of life, 4–8 points: bad quality of life, 9–13 points: good quality of life, 14–18 points: very good quality of life. Altogether we received 21 questionnaires for examination, meaning a return rate of 70%.

### 2.3. Statistical analysis

Graph Pad Prism<sup>®</sup> Version 5.01 was used to plot graphs and perform analyses. Percentages are presented for categorical



**Fig. 1.** Operation situs using a medial approach and a sliced PAA after excision. Shown is the situs during the operation using an interponate and a medial approach (left). After total excision the aneurysm was sliced (right).

Download English Version:

<https://daneshyari.com/en/article/4195434>

Download Persian Version:

<https://daneshyari.com/article/4195434>

[Daneshyari.com](https://daneshyari.com)