

Leg Wound Complications During Hospital Stay When Using Conventional Saphenous Vein Harvest Versus Endoscopic for Coronary Bypass Surgery

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ABSTRACT

Background: Using the endoscope to harvest the saphenous vein as an alternative to conventional method helps in decreasing leg wound related complications.

Objective: The aim of the current work was to detect the leg wound problems while using endoscopic vein harvesting versus conventional method during hospital stay.

Patients and Methods: Fifty patients underwent coronary bypass surgery divided into two groups randomly, conventional, and endoscopic. Data of the patients were collected perioperatively. Patients were followed up during hospital stay which was 5-7 days in average regarding leg wound complications.

Results: Leg wound pain in the postoperative period during hospital stay was significantly higher in the conventional group, leg swelling was lower in endoscopic group, occurrence of hematoma of the leg was higher in endoscopic group.

Conclusion: It could be concluded that harvesting the saphenous vein endoscopically is superior to conventional method regarding leg wound complications in addition to its cosmetic advantage.

Keywords: Leg Wound Complications, Conventional Saphenous Harvest, Endoscopic, Coronary Bypass Surgery.

INTRODUCTION

The saphenous vein graft is the commonest graft used in coronary surgery⁽¹⁾. Conventional saphenous vein graft harvesting is accompanied by increased incidence of leg wound complications⁽²⁻³⁾. Endoscopic vein harvesting reduces the leg wound related problems in comparison to conventional method⁽⁴⁻⁵⁾.

The aim of the current work was to detect the leg wound problems while using endoscopic vein harvesting versus conventional method during hospital stay.

PATIENTS AND METHODS

This prospective randomized study included a total of fifty patients underwent coronary bypass surgery and requiring 2 segments of saphenous vein plus internal mammary artery, attending at Department of Cardiothoracic Surgery, Cairo University Hospitals. This study was conducted between January 2017 to December 2019.

Ethical consent:

An approval of the study was obtained from Cairo University academic and ethical committee. Every patient signed an informed written consent for acceptance of the operation.

Patients were divided into two equal groups: 25 patients each, conventional method of saphenous vein harvesting in **group one**, and endoscopic harvesting in **group two**.

Duplex was used to map both saphenous veins prior to surgery. Saphenous vein should be at least 5.0 mm under the skin, wall thickness less than 1.6 mm, lumen 2.0 to 4.0 mm and the deep venous system must be patent. In both groups the operator was a senior surgeon. In group one side branches were clipped and ligated, in group two MAQUET harvesting system was used with carbon dioxide insufflation, the branches were divided

using special harmonic diathermy and clips applied after harvesting.

Perioperative data were collected. Patients were followed up after surgery during hospital stay which was (5-7) days in average as regards leg wound related complications. Severity of pain in the leg wound was documented as the patient subjectively complained.

Statistical analysis

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage. Independent-samples t-test of significance was used when comparing between two means. P<0.001 were considered statistically significant.

RESULTS

Patients' data listed in (Table 1). Most of patients were diabetic males. Operative data regarding harvesting of the saphenous vein are listed in (Table 2). The length of skin incision is significantly lower in group 2. The mean length of the harvested saphenous vein was the same in both groups. The harvesting time in both groups was almost the same. The number of branches required repair using 7-0 were significantly higher in the endoscopic group. The length of skin incision was significantly shorter in endoscopic group. Data showing leg wound related complications during hospital stay listed in (Table 3). Postoperative pain was significantly higher in group 1 during hospital stay. Incidence of hematoma was higher in group 2 but not statistically significant. Swelling of the leg was higher in group 1.

Table (1): Clinical data of the patients



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	Conventional harvesting (N=25)	Endoscopic (N=25)
Male	20(80%)	22(90%)
Female	5(20%)	3(12%)
Age (years)	66 ±9.94	65±9.17
Left ventricular ejection fraction	55.4±7.85	54.4±8.09
Diabetics (%)	22(90%)	20(80%)
Smokers (%)	18 (72%)	16 (64%)

Table (2): Operative data

	Group 1 (N=25)	Group 2 (N=25)	P-value
Graft length (cm)	35.8±7.36	34.5±10.25	
Time needed to harvest the graft (min)	37.3±14.30	38.6±22.45	
No. of 7-0 sutures	0.3±0.94	1.2±1.57	P<0.001
skin incisions length (cm)	41.3±11.81	7.5±2.1	P<0.001

The previous data are shown as: mean ± the standard deviation. not significant (P>0.05)

Table (3): Leg-related complications during hospital stay

	Group 1 (N=25)	Group 2 (N=25)	P-value
Haematoma (%)	11 (44%)	15 (60%)	Not significant
Swelling (%)	6 (24%)	3 (12%)	Not significant
Leg wound infection (%)	1 (4%)	0	Not significant
Leg wound pain (%)	2 (8%)	0	Not significant

DISCUSSION

Conventional saphenous vein graft harvesting has been the best method in coronary surgery for many years, endoscopic technique has become commonly used as a substitute to conventional method. The endoscopic harvesting of saphenous vein is superior to conventional technique in decreased postoperative leg wound pain, decreased postoperative swelling and decreased wound length⁽⁶⁾. It carries the hazard of CO₂ embolization during insufflation⁽⁷⁾. Data about follow up of endoscopically harvested saphenous vein graft is deficient⁽⁸⁾. Due to the increasing number of endoscopically harvested vein and adoption of the technique the harvesting time decreased till it almost reaches the time of open technique⁽⁹⁻¹⁰⁾. In the current study endoscopically harvested saphenous vein graft showed that postoperative leg wound pain

during hospital stay (which was 5-7 days in average) was significantly lower than patients of open technique. In our study number of patients suffered hematoma in the leg was higher in the group of endoscopically harvested saphenous vein graft but it was not statistically significant. In our study the leg wound length was significantly lower in the endoscopic group.

CONCLUSION

It could be concluded that saphenous vein graft harvesting endoscopically is superior to conventional method in decreasing postoperative pain, swelling and it is better in cosmetic result.

REFERENCES

- Allen K, Cheng D, Cohn W et al. (2005):** Endoscopic Vascular Harvest in Coronary Artery Bypass Grafting Surgery: A Konsensus Statement of the International Society of Minimally Invasive Cardiothoracic Surgery (ISMICS) 2005. *Innovations: Technology and Techniques in Cardiothoracic and Vascular Surgery*, 1(2):51-60.
- Carpino P, Khabbaz K, Bojar R et al. (2000):** Clinical benefits of endoscopic vein harvesting in patients with risk factors for saphenectomy wound infections undergoing coronary artery bypass grafting. *J Thorac Cardiovasc Surg.*, 119(1):69-75.
- Reed J (2008):** Leg wound infections following greater saphenous vein harvesting: minimally invasive vein harvesting versus conventional vein harvesting. *Int J Low Extrem Wounds*, 7(4):210-9.
- Allen K, Heimansohn D, Robison R et al. (2000):** Risk factors for leg wound complications following endoscopic versus traditional saphenous vein harvesting. *Heart Surg Forum*, 3:325-30.
- Dusterhoff V, Bauer M, Buz S et al. (2001):** Wound-healing disturbances after vein harvesting for CABG: a randomized trial to compare the minimally invasive direct vision and traditional approaches. *Ann Thorac Surg.*, 72:2038-43.
- Markar S, Kutty R, Edmonds L et al. (2010):** A meta-analysis of minimally invasive versus traditional open vein harvest technique for coronary artery bypass graft surgery. *Interact Cardio Vasc Thorac Surg.*, 10:266-70.
- Lin T, Chiu K, Wang M et al. (2003):** Carbon dioxide embolism during endoscopic saphenous vein harvesting in coronary artery bypass surgery. *J Thorac Cardiovasc Surg.*, 126:2011-5.
- Pranjal D, Soroosh K, Nannan T (2011):** Impact of the learning curve for endoscopic vein harvest on conduit quality and early graft patency. *Ann Thorac Surg.*, 91(5):1385-92.
- Andreassen J, Nekrasas V, Dethlefsen C (2008):** Endoscopic vs open saphenous vein harvest for coronary artery bypass grafting: a prospective randomized trial. *Eur J Cardiothorac Surg.*, 34:384-9
- Ouzounian M, Hassan A, Buth K et al. (2010):** Impact of Endoscopic Versus Open Saphenous Vein Harvest Techniques on Outcomes After Coronary Artery Bypass Grafting. *The Annals of Thoracic Surgery*, 89(2):403-8.