International Journal of Research in Dermatology
Sushma I et al. Int J Res Dermatol. 2022 Jan;8(1):62-66
http://www.ijord.com

DOI: https://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20214914

Original Research Article

Saphenous vein graft harvesting site dermatoses among CABG patients

Sushma I., M. K. Padma Prasad, Nivin Simon J., A. J. S. Pravin*, S. Raja Gopal, M. Vijaya Bharathi, Mulamoottil George Varghese

Department of DVL, Sree Mookambika Institute of Medical sciences, Kulasekharam, Tamil Nadu, India

Received: 18 October 2021
Accepted: 07 December 2021

***Correspondence:**
Dr. AJS Pravin,
E-mail: pajspravin@gmail.com

ABSTRACT

Background: Coronary artery bypass grafting (CABG) is a cardiac surgical procedure in which the greater saphenous vein graft is most often used to bypass the narrowed coronary artery segments. The side effects of leg vein harvesting include a variety of cutaneous changes. We report the cutaneous effects at the saphenous vein harvesting sites in 32 patients who underwent CABG. To study the dermatoses occurring at the saphenous vein harvest site post CABG surgery.
Methods: A prospective observational study on prevalence of saphenous vein harvesting site dermatoses in patients with CABG attending a tertiary care centre in Kanyakumari, for a period of 6 months from March 2021 to September 2021. The cutaneous changes on and around the saphenous vein (SV) graft donor site were noted in all patients.
Results: A total of 200 patients underwent CABG during the period of study, out of which 32 patients developed dermatitis at the vein harvesting site. At the donor site, Pruritus was the most common symptom seen in 14 (44%) patients, followed by eczema in 11 (34%) patients, xerosis in 9 (28%), hyperpigmentation in 6 (20%), depigmentation in 2 (3%), anesthesia in 3 (10%), neuralgic pain in 3 (8%), burning sensation in 2 (6%), hypertrophic scar in 3 (10%), and infections in 3 (9%) patients.
Conclusions: To minimize the donor site complications following CABG, we recommend proper cutaneous and vascular evaluations, identifying the best graft site, employing meticulous surgical technique, recognizing complications early, and starting treatment without delay.

Keywords: Coronary artery bypass graft, Saphenous vein, Dermatitis, Eczema

INTRODUCTION

Coronary artery bypass grafting (CABG) is a common cardiac surgical procedure during which portions of arteries or veins from the patient's own body are grafted to bypass the narrowed coronary artery segments.[1] During this procedure, the greater saphenous vein is used as the conduit and the side effects of leg vein harvesting include a variety of cutaneous changes. Dermatitis commonly known as "eczema" refers to a group of dermatoses characterized by inflammation of the skin occurring secondary to a variety of causes including allergic, atopic, irritant, stasis, etc.[2] The eczematous eruptions occurring at the site of surgical procedures has been confusing. In the past, various authors have named the dermatoses depending on the site or nature of the surgical procedure.[3,4]

In 2009, Verma et al reported as "surgery of the knee, injury to the infrapatellar branch of the saphenous nerve, traumatic eczematous dermatitis" (SKINTED).[5] The condition reported by them is region- and procedure-specific. The term "posttraumatic eczema" (PTE) proposed by Mathias is nonspecific and Neuropathy dermatitis was proposed by Sharquie et al.[6] Despite improvements in medical care and the increased

emphasis on quality improvement programs to reduce postoperative infections, nearly 5% of patients experience major infection after cardiac surgery.[7]

We report the dermatoses at the saphenous vein harvesting sites in 32 patients who underwent CABG. Heart disease is a lifelong condition and many of the patients are smokers, alcoholics and other associated comorbidities like diabetes mellitus, peripheral vascular disease (PVD), obesity, venous hypertension, renal failure etc.[8,9]

Dermatoses after CABG procedures are frequent and only few literatures are published.

Aim

To study the dermatoses occurring at the saphenous vein harvest site in post CABG patients.

METHODS

A prospective observational study on prevalence of saphenous vein harvesting site dermatoses in all patients with CABG attending a tertiary care centre in the follow up OPD in Kanyakumari for a period of 6 months from March 2021 to September 2021.

A total of 200 patients who had undergone CABG using the saphenous vein harvested by longitudinal incision open technique 15-45 cm in length at the legs and thighs were included in this study. Informed written consent was taken from each patient after full explanation about the nature of the study. Institutional ethical committee approval was obtained.

A detailed history was taken from all patients including age, sex, weight, height and BMI, history of drugs taken, other skin or systemic diseases, smoking and alcohol intake, date of CABG, duration, course, site of the lesion, associated symptoms, and treatment. Sensory examination was done to assess sensory loss along the course of saphenous nerve using light touch and pin prick test. Digital photographs were taken.

RESULTS

The cutaneous changes on and around the saphenous vein (SV) graft donor site were noticed in 32 out of 200 patients who underwent CABG. There were 22 males and 10 females in our study with M:F ratio of 2.2:1.

Most patients in our study belonged to the age group 46-55 years.

25 patients were overweight. 12 had history of smoking, 10 had history of alcohol intake, 18 had both smoking and alcohol intake. 20 patients had diabetes mellitus, 22 had hypertension, 23 had hyperlipidaemia, 11 had peripheral vascular disease.

Figure 1: Hyperpigmentation.

Figure 2: Eczema.

Figure 3: Hypertrophic scar.

At the saphenous vein harvest site, pruritus was the predominant presenting symptom seen in 14 (44%) patients, followed by eczema in 11 (34%) patients, xerosis in 9 (28%), hyperpigmentation in 6 (20%), anesthesia in 3 (10%), hypertrophic scar in 3 (10%), infections in 3 (9%), neuralgic pain in 3 (8%), burning sensation in 2 (6%), patients and depigmentation in 2 (3%).

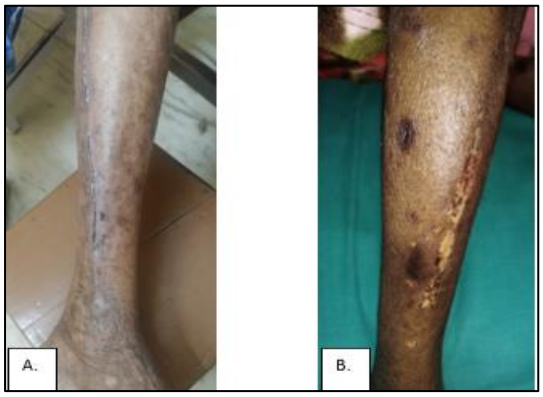

Figure 4: (A) Xerosis. (B) Depigmentation.

Figure 5: Infection.

Table 1: Cutaneous changes at donor site.

Age (in years)	Sex		Pruritis	Eczema	Xerosis	Hyperpig-mentation	Anesthesia	Depig-mentation	Neuralgic Pain	Burning Sensation	Hypertro-phic scar	SSIS
35-45	Male	4	2	1	1		1					
	Female	2	2	2	1		2					
46-55	Male	10	3	3	2		2		1	1	1	
	Female	7	3	2	2	1	1	1	1	1	1	1
56-65	Male	6	2	2	2	1			1		1	1
	Female	3	2	1	1	1		1	1	1		1
Total		32	14	11	9	3	6	2	4	3	3	3

DISCUSSION

The cutaneous changes on and around the saphenous vein (SV) graft donor site were noticed in 32 out of 200 patients who underwent CABG.

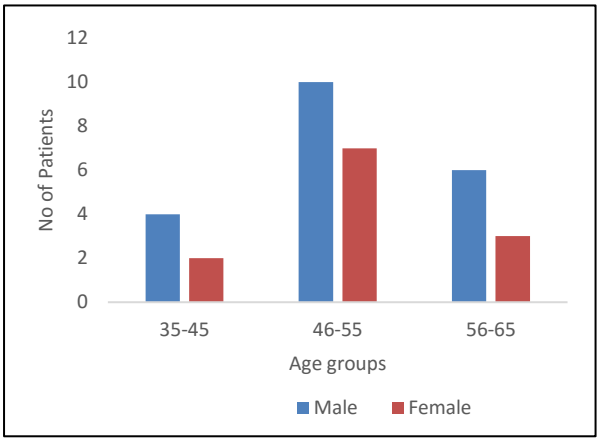

Figure 6: Age and sex distribution.

At the saphenous vein harvest site, pruritus was the most common symptom seen in 14 (44%) patients, followed by eczema in 11 (34%) patients, xerosis in 9 (28%), hyperpigmentation in 6 (20%), depigmentation in 2 (3%), anaesthesia in 3 (10%), neuralgic pain in 3 (8%), burning sensation in 2 (6%), hypertrophic scar in 3 (10%), and infections in 3 (9%) patients.

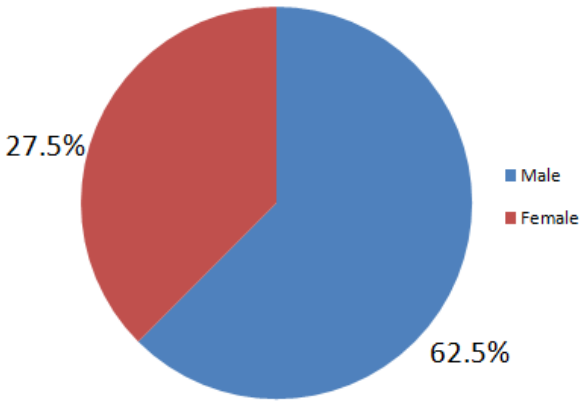

Figure 7: Sex distribution.

This is like a study by Rai et al, which observed xerosis (40%) and eczema (30%) as the most common findings.[10]

However, another recent study by Sharquie et al found anaesthesia (81%) to be the most common finding followed by xerosis (28%).[11]

25 patients were overweight. 12 had h/o smoking, 10 had history of alcohol intake, 18 had both smoking and alcohol intake. 20 patients had diabetes mellitus, 22 had hypertension, 23 had hyperlipidaemia, 11 had peripheral vascular disease.

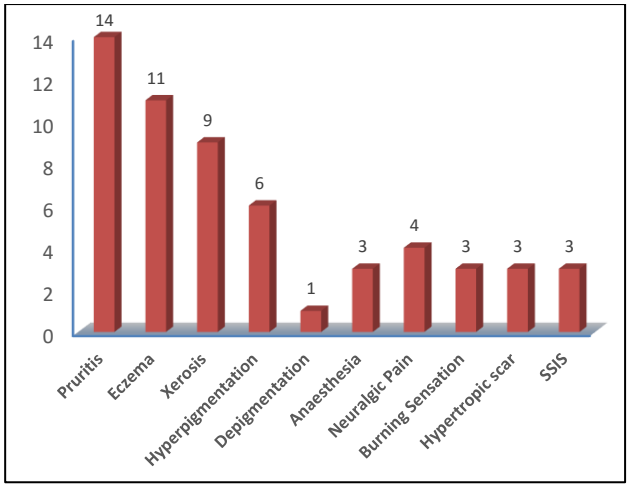

Figure 8: Dermatosis at GSV graft harvest site.

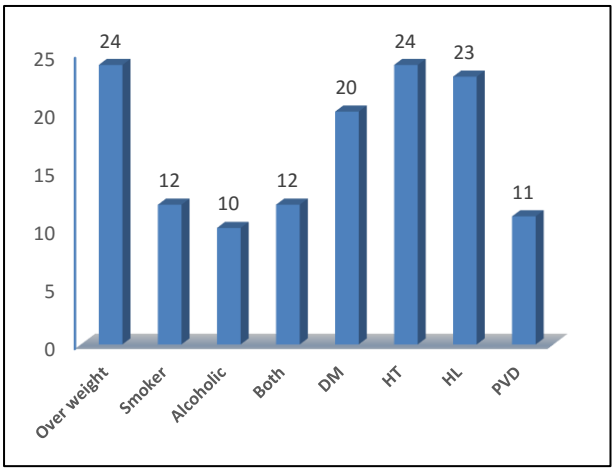

Figure 9: Co-morbidities.

Skin incisions lead to traumatic transections of dermal nerves causing denervation of various autonomic organs of the skin, responsible for sudomotor and vasomotor responses. This is followed by the release of neuropeptides like substance P, Calcitonin gene-related peptide (CGRP), Vasoactive intestinal peptide (VIP) and Neurotensin from the nerve terminals at the time of nerve regeneration to play a role in both immediate and delayed-type hypersensitivity reactions in the skin.

Autonomic cutaneous nerve fibres restricted to the dermis are innervating blood vessels, arteriovenous anastomoses, lymphatic vessels, arrector pili muscles, eccrine glands, apocrine glands, and hair follicles and regulating their function thereby maintaining the skin barrier function. Acetylcholine and catecholamines secreted from autonomic nerve endings play a role in keratinocyte proliferation, adhesion, migration, and differentiation. Altered cutaneous anatomy and physiology following injury to peripheral nerves have been termed as “trophoneurosis”.

Systemic conditions like diabetes, atherosclerotic vessel disease as well as aging changes as a possible cause of eczematous dermatitis were ruled out since the eruption primarily involved areas of surgical incisions and adjoining skin, while rest of the cutaneous surface was essentially normal. Drugs such as statins, salicylates, beta blockers given postoperatively have also been reported to induce xerosis and eczematous changes. Post traumatic eczema refers to eczematous lesions developing at sites of mechanical, thermal, or chemical injury and usually develops within 2-4 weeks of trauma. On the other hand, autonomic denervation dermatitis results from the transection of dermal nerves during surgical procedures.

CONCLUSION

The causes of dermatoses after saphenous vein harvest for coronary artery bypass graft procedures are multifactorial. To minimize these complications, we should assess the patient completely, perform proper cutaneous and vascular evaluations, identify the best site for saphenous vein harvest incision, employ a meticulous surgical technique with modifications, recognize complications early, and start the recommended treatment without delay.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Ghosh S. Saphenous Vein Harvesting Site Dermatoses in Eastern India. Dermatology Online Journal. 2009;15(7):13.
2. Bart RS. Dermatitis at Vein Graft Site. Archives of Dermatology. 1983;119(2):97-8.
3. Kato N. Saphenous Vein Graft Donor Site Dermatitis in Japan. The Journal of Dermatology. 1995;22(9):681-5.
4. Hruza L. Saphenous vein graft donor site dermatitis. Arch Dermatol. 1994;130:115-6.
5. Verma. Explaining a hitherto nameless condition: 'SKINTED'. Clinical and experimental dermatology. 2009;34:e465-6.
6. Sharquie KE. Neuropathy Dermatitis. VGRD. 2010.
7. Baddour KM, Bisno AL. Recurrent cellulites after coronary artery bypass surgery. JAMA. 1984;251:1049-52.
8. Scher LA, Samson RH, Ketosugbo A, Gupta SK, Ascer E, Veith FJ. Prevention and management of ischemic complications of vein harvest incisions in cardiac surgery case reports. Angiology. 1986;37:119-23.
9. Lavee J, Schneiderman J, Yorav S, Millet M, Adar R. Complications of saphenous vein harvesting following coronary artery bypass surgery. J Cardiovasc Surg. 1989;30:989-91.

10. Rai R. Saphenous vein graft dermatitis in patients with coronary artery bypass graft. Indian J Dermatol Venereol Leprol. 2008;74:278-9.
11. Sharquie KE. Post-Bypass Dermatitis. VGRD. 2009.

Cite this article as: Sushma I, Prasad MKP, J NS, Pravin AJS, Gopal SR, Bharathi MV et al. Saphenous vein graft harvesting site dermatoses among CABG patients. Int J Res Dermatol 2022;8:62-6.