

Ostectomy for Diabetic Neuro-Ischaemic Foot Ulcer Involving under Prominent Distal Part of the First Metatarsal

Gaddafi A L¹, Faruque G², Islam Z³, Rahman MA⁴, Jui FN⁵

Abstract

Diabetic neuro-ischaemic foot ulcer, a devastating complication of uncontrolled diabetes mellitus. Patient named Mr. Hasan Mridha, 65 years old hypertensive, diabetic got admitted in Diabetic Association Medical College & Hospital at orthopedic unit on 31.01.18 with the complaints of ulceration under prominent first metatarsal head and distal phalanx for 2 months. This patient had features of peripheral neuropathy. On special examination, ankle-brachial pressure index was 0.64. Biothesiometer and monofilament test were positive. As the patient was in elderly aged, so ostectomy and excision of the distal phalanx with primary repair were done under ankle block. No such case has reported previously in our country. So it deemed necessary to report the case. Post-operative outcome was satisfactory.

Key words: Ostectomy, Diabetic neuro-ischaemic foot ulcer.

Introduction:

The world Health Organization defines diabetic foot as the lower limb of a diabetic patient that has the potential risk of pathological consequence, including infection, ulceration, and/or destruction of deep tissues associated with neurological abnormalities, various degrees of peripheral vascular disease, and/or metabolic complications of diabetes. About 194 million people worldwide or 5.1% in the age group of 20 to 79 were estimated to have diabetes in 2003¹.

The triage of neuropathy, peripheral arterial disease and mechanical stress is responsible for the development of the diabetic foot ulcer. The surgeon is often faced with difficult wound healing challenges for the management of neuroischaemic planter diabetic foot ulcer. Worldwide, a lower limb is lost every 30 seconds as a consequence of diabetes². It usually develops at 5-10 years duration of DM.

The main predisposing factors were peripheral neuropathy and peripheral vascular disease⁵. Diabetic patients suffering from neuropathy can develop minor cuts, scrapes, blisters or pressure sores that they may not be aware of due to the insensitivity. If these minor injuries are left untreated, complications may result and lead to ulceration and possibly even amputation³.

Neuropathy can also cause deformities such as Bunions, Hammer Toes and Charcot's Foot⁴. These result from undue bony prominence with high planter pressure points, leading to callosities and ulceration.

Case Report

Hasan Mridha, 65 years old diabetic patient had complaint of ulceration under prominent first metatarsal head and distal phalanx for 2 months. This was a known case of DM for 5 years and HTN for 6 Years. He took anti-diabetic and anti-hypertensive drugs irregularly. On Examination, two full thickness clear neuro-ischaemic ulcers surrounded by callus were observed under the prominent first metatarsal head and distal phalanx measuring about 3×2cm and 1×1cm. Displacement of the metatarsal fat pads to the base of the proximal phalanges due to muscle atrophy were also noted. Features of neuropathy (such as Callus around ulcer, Claw toes, Hammer toes, Tingling sensation, Burning sensation) were present.

On special examination

1. Biothesiometer test positive (36),
2. Ankle/Brachial pressure index was 0.64

1. Dr. Abdullah Al Gaddafi
Assistant Professor, Department of Orthopedics
Diabetic Association Medical College, Faridpur.
2. Dr. Md. Golam Faruque
Associate professor, Department of Orthopedics
Jessore Medical College, Jessore
3. Dr. Zahirul Islam
Assistant professor, Department of Orthopedics
Jessore Medical College, Jessore
4. Dr. Md. Muhibbur Rahman
MD Resident, Department of Physical Medicine &
Rehabilitation
BSMMU
5. Dr. Farhana Nazneen Jui
Lecturer, Department of Community Medicine
Diabetic Association Medical College, Faridpur

Correspondence to:

Dr. Abdullah Al Gaddafi
Assistant Professor, Department of Orthopedics
Diabetic Association Medical College, Faridpur.
Cell: +880 1747819408, E-mail: drnanajrbd1983@gmail.com



Biothesiometer



Hand-held doppler

Investigation findings

Radiological finding: X-ray right foot B/V Showing prominent first metatarsal head with slight displacement of Metatarsophalangeal joint with periosteal reaction.



Laboratory investigation

- Blood count : Hb% -13.58g/dl,
WBC- $6.44 \times 10^3 \mu\text{l}$
- S. Creatinine: 1.05mg/dl
- FBS : 8.61mmol/L
- 2HABF : 9.73mmol/L
- HbA1c : 7.7%

Operative Procedure

Extensile longitudinal incision extending from tip of the great toe to tarso-metatarsal joint under ankle block, callus around ulcers were removed and the wounds were debrided properly. Then prominent part of the first metatarsal and distal phalanx were excised under proper bleeding control. Reconstruction of displaced fat pads was done and skin was closed primarily over a suction drain, which was left in place for 2 days. Short leg back slab was applied.



Post-Operative management

The patient was discharged after 7 post-operative day with proper medication and advice. At 20th post-operative day, stitches were removed.

Follow Up

25th day after surgery patient came with satisfactory result.

Discussion



The distal part of the first metatarsal is the common site for the development of the neuropathic ulcer. Ostectomy operation under prominent part of the first metatarsal is rare in my country. Diabetic neuroarthropathy is a frequent complication of diabetes mellitus that results in instability of the foot, structural deformity and soft tissue breakdown secondary to increased planter pressure. Early this patient could not realise the development of ulcer because of neuropathic foot. Day by day, the ulcer increased in size due to barefoot walking.

Conclusion

Ostectomy for the management of the neuro-ischaemic diabetic foot ulcer under 1st metatarsal is a valuable but uncommon procedure. Early diagnosis and management can prevent ray amputation of the great toe.

References:

- International Diabetes Federation Diabetes Atlas (2006) Available at- <http://www.eaqtlas.idf.org/prevelence/All>. Accessed 17 may 2006
- International Diabetes Federation (2005) Time of act. Diabetes and foot care, Brussels, Belgium: International Diabetes Federation
- Morbach s, Lutale JK, Viswara than V, Mollenberg J, ochs HR, Raja Sheuar s, et al. Regional difference in risk factors and clinical presentation of diabetic foot lesion. Diabetes Med.2004; 21: 91-5. [PubMed: 14706061]
- Armstrong DG, Wrobel J, Robbins JM. Guest Editorial: Are diabetes-related wounds and amputations worse than cancers Int wound J. 2007; 4: 286-7. [Pulmed: 18154621]
- Muduli IC, Ansar PP, Panda C, Bhera NC. Diabetic Ulcer complication and it's management- Medical College Based Descriptive study in Odisha, Eastern State of India. Indian Journal of Surgery 2015; 77(2)270-4