



Amit Jain's Destructive Ladder in Diabetic Foot-akin and Antonymous to Reconstructive Ladder

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Article Information

Editor(s):

(1) Dr. Georgios Tsoulfas, Aristoteleion University of Thessaloniki, Greece.

Reviewers:

(1) Stasini-Fotoula Bartzoki, Aristotle University of Thessaloniki, Greece.

(2) Iraklis Avramopoulos, Iasso Hospital, Greece.

(3) Takahiko Nagamine, Sunlight Brain Research Center, Japan.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/69138>

Mini-review Article

Received 22 April 2021

Accepted 29 June 2021

Published 02 July 2021

ABSTRACT

Diabetes is one of the most common non-infectious diseases seen worldwide. Its incidence is rising at an alarming rate and so are its complications. Foot problems in diabetic patients are common in practice and they are frequent cause of hospitalization. Managing diabetic foot is expensive. Diabetic foot ulcers are prone for infections and they can result in amputation which can render the patient disabled. There are distinct varieties of amputation in lower limb and they can be divided into minor amputations and major amputations. Minor amputations are performed for limb salvage and they allow patient to ambulate on their own. The purpose of this article is to highlight on 2 teaching models namely the reconstructive ladder-a traditional teaching model in wound reconstructive surgery field and the destructive ladder-a newly proposed teaching model by the author for amputation.

Keywords: Diabetic foot; reconstruction; amputation; ladder.

1. INTRODUCTION

Diabetes is a fast growing global public health problem that is predicted to affect around 642

million people by the year 2040 [1,2]. One of the most common, costly, severe complications of diabetes which is also one of the commonest causes of hospitalization is the diabetic foot [3]. It

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is estimated that up to 34% of diabetic patients may have foot ulcers in their lifetime [4]. The mortality rate and treatment cost for diabetic foot ulcer is also very high [2]. It is stated that every year 5% of diabetes patients will develop foot ulcer and 1% will require amputations [3].

Once the foot suffers a tissue damage resulting in wound, then there are 2 options. One option is to ensure that the wound heals if it is clean in nature and there are various ways this can be done for which one can follow the reconstructive ladder. The second option is in case there is tissue damage/necrosis, then one has to ensure that the unhealthy tissue/ destroyed parts are removed and for this one has to either resort to debridement or he may have to do amputation based on extent of tissue destruction. One can follow the amputation/destructive ladder if amputation becomes necessary.

The following is a brief understanding on reconstructive and destructive ladder.

2. RECONSTRUCTIVE LADDER

The reconstructive ladder is one of the popular traditional teaching models that provide simple approach that helps clinician to choose the appropriate methods for wound closure [5,6]. As one climbs the ladder, the methods of the wound management increases from simple to complex techniques [7]. This model has been used for decades in view of its simplicity, ease of understanding and teaching (Fig. 1). Various modifications of the reconstructive ladder exist [6,8]. They included creation of a new reconstructive ladder to proposal of horizontal ladder [6,8].

Distinct extensions/expansion/variants of this reconstructive ladder came into existence over years in view of availability of distinct methods of closure of the wounds [9,10,11,12]. Some of the well known variants/extensions are reconstructive elevator, reconstructive triangle, reconstructive stages, etc [9,10,11,12]. However, the reconstructive ladder has remained popular in view of its use. The reconstructive ladder has its supporters and also non supporters. Few experts felt that the new methods introduced over recent years, can be incorporated in the ladder model by adding an extra rung to it rather than having created various variants [7,9].

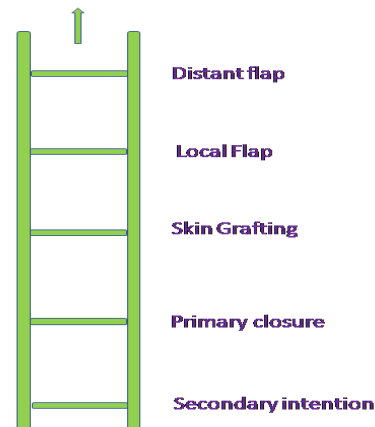


Fig. 1. The reconstructive ladder

3. DESTRUCTIVE LADDER

The concept of destructive ladder was recently proposed by Amit Jain, diabetic foot surgeon from India [9]. It is akin and antonymous to the reconstructive ladder. The Amit Jain's destructive ladder is also known as Amit Jain's amputation ladder [9]. This ladder provides various types of amputation available for extremity starting from distal to proximal most amputation [9]. In lower limb amputation, the distal most amputation is the toe amputation and it occupies the first/lowermost rung of the ladder. This is called destructive ladder because it revolves around removal of destroyed parts of the limb [9]. It is well known that amputation is a distressing and destructive procedure as it involves removal of part of a limb [9,13].

Unlike reconstructive ladder, where expert claims that better and more complex wound closure methods are available and one should chose them, in concept of destructive ladder, the distal most rung should be chosen as far as possible to obtain biomechanical viable limb and proximal procedure are never better than distal procedures and are advised only when no option is left. Further, this is an open model, wherein if any new amputation method is introduced in future, then it can be placed in this ladder at appropriate place. This ladder also has its variants similar to the concept of reconstructive ladder variants and includes destructive elevator, destructive pyramid, etc [9]. The destructive ladder/ amputation ladder is a part of super modern diabetic foot surgery [14].

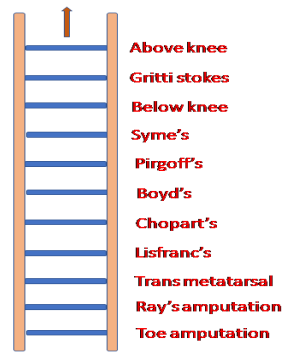


Fig. 2. Amit Jain's Destructive/ Amputation ladder

4. CONCLUSION

The reconstructive ladder and the destructive ladder serves as good teaching models to the clinicians who treat diabetic foot wounds. The reconstructive ladder provides an option related to closure of wounds whereas the destructive ladder provides option of removal of the part of the limb. Both these ladder provide the available options to the clinicians and one can use them judiciously in their practice.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Peer-review history:
 The peer review history for this paper can be accessed here:
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