Following Revascularization For Toe Gangrene: Await Auto-Amputation Or Chop it.

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Disclosures

NONE

Autoamputations - definitions

Spontaneous detachment of non-viable appendage from the body (Wikipedia)

Dry gangrene and loss of a digit due to profound local ischemia secondary to PVD or Diabetes (Free dictionary)

What are we dealing with?

This presentation will deal with:

- Dry gangrene only
- Limited to 1-2 toes
- Without local signs of infection
  (No Discharge, Edema, Rubor and Odor)
- Without systemic signs of infection
- Wet gangrene is not included

Treatment strategy to treat CLI

Arterial reconstruction is only one part of the complex process called wound healing.

Infection control is imperative.

Thorough and effective debridement is fundamental.

And........ not necessarily in this order
Debridment options

- Amputation
- Await autoamputation
- Larvae debridment

Treatment options are:

- Amputation only
- Reversed staged (pre-vascular intervention)
- Simultaneous with E.V. or bypass surgery
- Staged (shortly after vascular intervention)
- Differed amputation
- Await autoamputation

The place matters

In the OR – all options are possible
(Surgeons can do everything........)

In the angio suite – no surgical options on site

References

- Very limited literature
- No RCT
- Very different opinions

Frequent co-morbidities

- Diabetes Mellitus
- Chronic Renal Failure
- ESKD
- CIHD
- HTN
- CVD

Autoamputations - disadvantages

- Takes long time
- Many checkups are needed
- Possible 2ry infection
- Non – esthetic
- Prolonged pain
- Larvae appearance
**Autoamputations - advantages**

- Only dead tissue detaches
- No healthy tissue is resected
- No need for prolonged / expensive wound care

**Amputation - disadvantages**

- Healthy tissue is also removed
- Need for prolonged / expensive wound care

**Amputation advantages**

- Shorter healing
- Short-term pain
- More esthetic
- Package deal: “all in one”

**Indication for action**

- Local signs of infection
- Systemic signs of infection
- The patient’s will

**Contraindication for amputation**

- Poor demarcation
- Anticoagulation
- Blood dyscrasia i.e. Hemophilia

**The anestheia**

- General
- Regional
- Ankle block
- Local

Since many patients are diabetic with peripheral neuropathy, only minimal anesthesia is needed in many cases.
We know that...

• Good blood supply can induce rapid healing following amputation.

• Poor blood supply can
  1. Delay healing
  2. Cause 2ry infection

Some literature

Hunter GA 1975
179 pts. diabetics & nondiabetics
No revascularization
208 minor amputations
Wound healing at 3 month
Poor outcome. Not advisable
Autoamputation not mentioned

Jacobs MJ 1996
Following 324 pts. Based on his results the policy was changed from staged procedure to simultaneous.
Autoamputation not mentioned

Cheynel-Hocquet C 1996
In infected cases - reversed staged.
Amp first, revascularization differed.

In dry gangrene – revascularization first and amputation simultaneously or at a second stage a few days later.
Autoamputation not mentioned.

Albrktsen SB 1997
95 limbs among 89 pts.
50% diabetics
Simultaneous or staged
Median time to healing 30 days (17-452)
99% healing rate when reconstruction was open
Autoamputation not mentioned
Steel MW 2007

Simultaneous or staged in 35 patients with successful vascular bypass.

Autoamputation not mentioned

Fikri R et.al: AWAITING AUTOAMPUTATION: A PRIMARY MANAGEMENT STRATEGY FOR TOE GANCRENE IN DIABETIC FOOT DISEASE (2011)

Retrospective analysis 2007-2010
11 patients, 64% males 36% females
82% had ESRD
All were Type I & II diabetics with toe gangrene
All with well demarcated dry digital gangrene
Patient’ decision: amputation or autoamputation
11 elected to have autoamputation.

Fikri R et.al: AWAITING AUTOAMPUTATION:  A PRIMARY MANAGEMENT STRATEGY FOR TOE GANCRENE IN DIABETIC FOOT DISEASE

No vascular reconstruction possibility was available by duplex and DSA

Autoamputation was successful in 55% (6 patients)
Time till autoamputation - median 5 m (range 2-6 m)
In 4/11 patients the strategy failed >> surgical amputation (2 Ray & 2 TMT)
Time till intervention: Median 4.5 m (range 3-6.5)

Fikri R et.al: AWAITING AUTOAMPUTATION:  A PRIMARY MANAGEMENT STRATEGY FOR TOE GANCRENE IN DIABETIC FOOT DISEASE

2 patients died from CAD. One after Ray amp. and one awaiting autoamputation.

Severe pain in 3 pts.

Age, duration of diabetes, gender, ESKD, immunosuppresant therapy, diabetic control
All had no significance

The conceptual change

In the pre EV era revascularization by bypass surgery was combined with the necessary amputation to prevent graft infection and to assure optimal healing.

Current EV practice changed the concept since radiologists do not perform amputations.

However, surgeons practicing EV treatment can!! Should they?

What works better for what?

For Wound healing?
For Limb salvage?
For Functionality?
For Mortality?
For Hospital LOS?
For Shorter Rehabilitation time?
For Recurrent ulcer/wound/gangrene?

The outcomes of CLI Tx are sometimes illusive and contradictory: ex: limb loss with rapid successful rehabilitation against “successful” limb salvage with zero limb function and zero rehabilitation. It is not B@W. It is GRAY.
Care giver factors teach us

Our pace and eager to revascularize is high.
Our wound care “motivation” is much lower because it is:
• Labor intensive
• Time consuming
• Needs serial interventions
• Needs operating rooms
• The care givers are different.

Autoamputation concept

**Prons (at a first glance)**
- Not time consuming
- Not facilities consuming
- Not labor intensive
- Allows ambulatory EVT by non-surgical specialists
- Does not need collaboration of different specialties

WONDERFUL “ESCAPE” and ATTRACTIVE OPTION !!! BUT.....

Autoamputation

**Cons**
- Works in less than 50% - most failures due to infection.
- May result in higher levels of amputation in future.
- Very long process (months - years).
- Painful.
- Un-pleasant for the patient and relatives.
- Problematic rehabilitation and function.

Natural history : from dry to wet

CONCLUSIONS

- Our abilities to improve blood supply should match our abilities to supply the best local wound care possibilities.
- AA should be discouraged as a primary option.
- AA should be used in most sick and fragile patients and should be considered only as a “bail out”.
- The wounds should be debrided in few days at most, after demarcation is complete.

THANK YOU FOR YOUR ATTENTION