ROLE OF COLLAGEN CONDUIT FOR FOOT AND ANKLE NEUROMA SURGERY

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Our disclosures are in the Final AOFAS Program Book.
We have no potential conflicts with this presentation.
Painful and sensitive neuromas are common in foot and ankle, after open or crush injury.

End neuroma developed at the nerve after neurectomy of intermetatarasal nerve in case of Morton’s neuroma.

They are difficult problem both for patients and doctors.

Numerous surgical techniques have been described to deal with painful neuroma including simple excision, excision with cauterization of ends; application of chemical agent like phenol or alcohol at ends; suturing of nerve fascicles to each others; rerouting nerves to less vulnerable areas; placement of nerve ends in bone, muscles or veins; capping and wrapping of the nerve in silicone tubes or other materials.
OUR STUDY: MATERIAL AND METHOD

• We retrospectively reviewed our results of using collagen nerve tubes (type I bovine collagen) for foot and ankle neuromas. It was telephonic interview and chart review.

• UAB IRB approval was achieved.

• Most procedures were performed by senior author JSG from June 2006 to Jun 2011.

• Total 69 nerves underwent conduit procedure.
• 50 patients underwent single or multiple neuroma excision with placement of nerve end in to collagen conduit.
• Age: From 16-77; average 54 years.
• Side: 29 right, 20 left, one bilateral.
• Follow up: 6 months to 55 months; average 36 months
MATERIAL AND METHOD

• Involved nerves:
  1. 2-3 intermetatarsal (28),
  2. 3-4 intermetatarsal (26),
  3. tibial (2),
  4. lateral planter (1),
  5. medial branch of lateral planter (1)
  6. Dorsomedial cutaneous nerve of great toe (2)
  7. Lateral hallucal (1)
  8. Superficial peroneal (1)
  9. Deep peroneal (1)
 10. Common peroneal (1), (BK amputation stump)
 11. Sural (1)
 12. Calcaneal branch of tibial nerve (4)
SURGICAL TECHNIQUE: Intermetatarsal neuroma

- Planter approach: Brunner type (Fig: 1)
- Planter fascia incision.
- Identification of normal nerve by appearance and feel (Fig: 2)
- Excision of neuroma portion.
- Decide the appropriate size conduit according to nerve diameter
- 4-0 nylon suture pass through nerve end (Fig: 3)
- Tube pass into Hewson suture passer (Fig: 4)
- Conduit glide over 4-0 nylon suture and over end of nerve.
- Two epineurial sutures were applied to secure tube with nerve. (Fig: 5)
- Passing nerve along with conduit to dorsal side between metatarsals. (Fig: 6)
- Soft dressing with post op shoe.
- Full weight bearing at 2 wks.
RESULTS

• Results measured by four categories:
1. No pain, full satisfaction.
2. Mild pain, but satisfied with outcome.
3. Moderate pain, but improved from pre operative condition.
4. Severe pain, non satisfactory outcome.

1. Category 1: 30/69 (43%)
2. Category 2: 23/69 (33%)
3. Category 3: 6/69 (9%)
4. Category 4: 10/69 (15%)
RESULTS: 2-3 INTERMETATARSAL NEUROMA

RESULTS: 3-4 INTERMETATARSAL NEUROMA
Three superficial wound complication that responded to oral antibiotics.
Two developed RSD that responded to sympathetic block
Two of them required revision surgeries for persistent pain that eventually healed with minimal occasional pain.


This is largest series to our knowledge for recurrent foot neuromas by using collagen conduit.

We found about 85% satisfactory results, which are comparable to historical data.
Use of collagen conduit is safe and no long term complications.
Cost of collagen conduit is about $1200, is limiting factor, but cost is comparable to avoid another surgery or harvesting vein graft and donor site morbidity.
REFERENCES:


