3 Year Retrospective Case Series with Reconstruction of Necrotizing Fasciitis Utilizing Pure Hypochlorous Acid (pHA*) Preserved Wound Solution

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Background

- Necrotizing fasciitis is an accelerated deteriorating subgroup of necrotizing soft-tissue infections (NSTI) resulting in necrosis of the fascia, muscle, and subcutaneous tissue.[1,2]
- Necrotizing fasciitis poses significant complications and results in high rates of sepsis and mortality
- Early diagnosis, aggressive surgical resection, and adequate antimicrobial therapy have been shown to reduce mortality secondary to necrotizing fasciitis

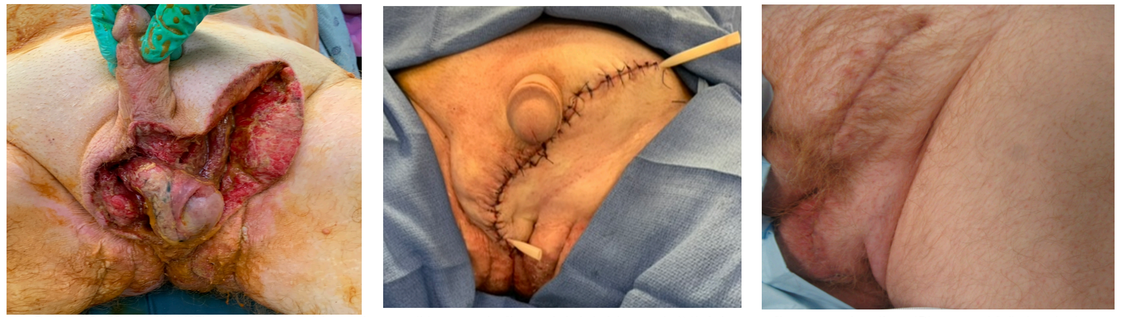
Objectives

- We share our experience with a comprehensive treatment plan for necrotizing fasciitis
- Patients underwent operative resection, wound bed preparation with preserved hypochlorous acid (pHA) solution, and varied reconstructive techniques

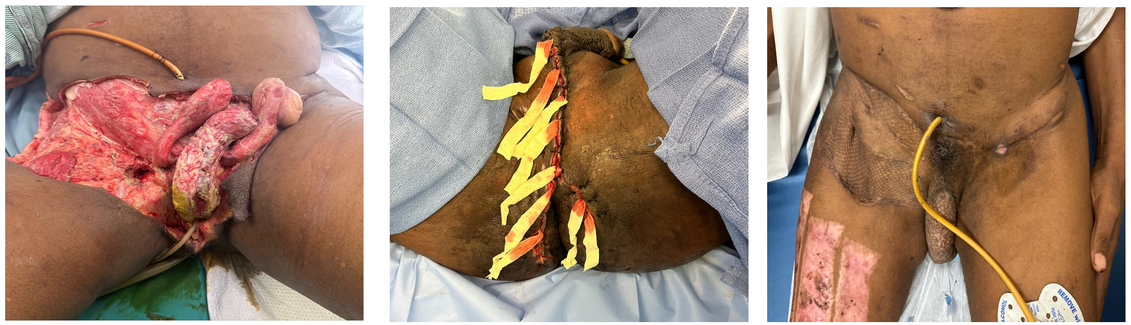
Methods

- Retrospective review from May '21-May '24 of patients with necrotizing fasciitis including Fournier's gangrene
- Treatment included intraop pHA solution for wound bed preparation with surgical excision and plastic surgical complex closure and flap techniques
- Operative techniques and perioperative protocols were examined
- Patient demographics, comorbidities, and operative cultures were reviewed
- Outcomes assessed in outpatient wound center based on post-operative complications and healing outcomes

Results



Patient 3: 53 M with NSTI of scrotum, pubis, perineum. (L): wound after serial debridement. (M): intraop after reconstruction. (R): wound fully healed



Patient 4: 69 M with NSTI of scrotum, penis, urethral defect, (L): Wound after serial debridement (M): after reconstruction w/ wick closure. (R): fully healed

Case	Age, Sex	NSTI at Presentation	Additional Findings	Reconstruction	Cultures	Outcome
1	57 F	Abdominal wall, L groin, perineum, L buttock	Osteomyelitis of pubis, hematoma	Debridement, ORAM flap, skin graft, NPWT, diverting colostomy	pseudomonas aeruginosa, serratia marcescens, Proteus vulgaris	5% loss of proximal ORAM flap, debrided, treated successfully with local wound care
2	43 M	Abdominal wall, L buttock, L groin, perineum, pubis, penis, scrotum	----	Debridement, rotational flap, LTA subcutaneous scrotal flap, open ended colostomy	beta streptococci, prevotella corporis, mobiluncus mulieris	Healed well inpatient, transferred out of state
3	53 M	Pubic, perineum, scrotum	----	Debridement, advancement flap	No growth	100% healed 9 weeks postop
4	69 M	Pubis, groin, scrotum, penis	urethral necrosis	I&D, Right rectus femoris muscle flap, LTA, STSG, NPWT	Proteus vulgaris	Minor surgical dehiscence treated with local wound care, 100% healed 1 year postop
5	65 M	Bilateral scrotum and perineum	----	Thigh pockets, LTA, wick assisted closure, NPWT	No culture data	Healing well inpatient, transferred to another hospital system
6	56 M	L buttock/thigh	Sacral/trochanteric pressure injury, osteomyelitis of ischium	Rotational flap, CLWC	klebsiella pneumoniae, pseudomonas A., enterococcus F.	Partial dehiscence of sacral reconstruction, no recurrence of infection
7	58 F	Lower abdominal wall, L groin, pubis, thigh	----	Rotational flap, CLWC	Klebsiella pneumoniae, citrobacter amalonaticus, enterococcus F.	5cm x7cm area of dehiscence treated with operative debridement

Table 1: Patient demographics, reconstruction, and healing outcome. I&D: irrigation and debridement; ORAM: oblique rectus abdominis musculocutaneous; NPWT: negative pressure wound therapy; LTA: local tissue arrangement; STSG: Split-thickness skin graft; CLWC: complex layered wound closure; CWC: complex wound closure

*pHA: Vashe pure hypochlorous acid wound solution. This presentation was supported by Urgo Medical North America

Results

7 cases were reviewed

- Common reconstructive techniques included local advancement flaps complex closure, and skin grafts
- 2 patients underwent reoperation for wound dehiscence (case 6,7)
- 2 patients healed from their excision and reconstruction without reoperation (case 2,3)
- 2 patients experienced minor wound dehiscence treated with local wound care, healed successfully (case 1,4)
- 1 patient lost to outpatient follow-up but discharged without known wound complications (case 5)

Conclusion

- All patients presented critically ill with overwhelming NSTI
- Necrotizing fasciitis excision, irrigation with stabilized pure hypochlorous acid (pHA) preserved solution irrigation, and perioperative care were standard for all patients, but reconstruction remained variable
- No infectious complications were seen with this integrated protocol including local tissue closure and delayed primary closure
- We report high salvage rates with local tissue reconstruction in these colonized wounds
- Wound bed preparation with pHA improves outcomes after excision and reconstruction for necrotizing fasciitis in this high acuity, high risk patient population

References

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