

# 12 Month Retrospective Review of Hidradenitis Suppurativa Plastic Surgical Excision and Reconstruction Techniques Involving the use of Pure Hypochlorous Acid (pHA) Preserved Wound Solution for Wound Bed Preparation

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### INTRODUCTION

- Hidradenitis suppurativa (HS) is a chronic inflammatory disorder that affects regions with a high concentration of folliculopilosebaceous units such as the axillary, inframammary, perineal, gluteal, and abdominal regions<sup>1,2</sup>
- The severity of HS is described by the Hurley grading system<sup>3</sup>.
  - Hurley Grade III is the most severe classification and describes extensive disease that includes sinus tracts, fistulas and scarring<sup>3,4</sup>
  - Grade III HS poses a difficult clinical challenge, often needing wide surgical excision<sup>2</sup>
- HS course may be complicated by alterations in the microbiota leading to dysbiosis progressing inflammation<sup>3,6</sup>
- Hypochlorous acid, part of the innate oxidative burst response, is an inorganic bactericidal compound, and is effective against a broad range of microorganisms<sup>7</sup>
  - Chances of developing resistance are minimal<sup>7</sup>
  - Very low potential for damage to infected tissues given safety profile and high therapeutic index<sup>7</sup>
  - Wound bed preparation with pHA has been shown decrease weight-bearing pain and Bates-Jensen pain scores<sup>6</sup>

AGE SEX	DATE OF OPERATION	HS LESION CHARACTERIZATION INTRAOPERATIVE CULTURES	CLOSURE TYPE CULTURES
1 25,F	1/17/2022	L. gluteal region (12cmx8cm), R. gluteal region (12cmx10cm) + <i>Staphylococcus epidermidis</i> , + <i>Gemella morbillorum</i>	L. Gluteal region: FC rotation flap R. Gluteal region FC advancement flap, STSG, CLWC 12cm of bilateral thigh and posterior perineum Complications: none
2 25,M	2/21/2023	R. axilla (20cmx10cm), L. axilla (19cmx16cm) + <i>Group B. strep</i>	R. Axilla: FC advancement flap, L. axilla: 5cm wound closure Complications: OR takeback POD 2 for L. axillary hematoma
3 25,M	2/23/2023	L. axilla (13cm) + <i>Group B. strep</i>	L. axilla: CLWC Complications: none
4 35,F	4/14/2022	R. groin (21cmx8cm) + <i>Streptococcus anginosus</i>	Perineum/vulva: thigh FC, advancement flap Complications: none
5 25,M	5/31/2022	Abdominal (75cm W x 20cm H) + <i>Group B. strep</i>	Abdominal FC advancement flap + CLWC Complications: none
6 42,M	6/2/2022	Bilateral scrotum + bilateral groin (25x20cm on either side) + <i>Bacteroides fragilis</i>	FC advancement scrotal flap (13cmx13cm), bilateral superficial FC advancement flap, CLWC Complications: minor wound dehiscence that did not require OR
7 41,F	6/28/2022	L. buttock, L. posterior thigh, + perineum (30cmx10cmx4cm), L. anteromedial thigh (5cmx10cmx4cm), R. buttock + R. posterior thigh (17cmx12cmx4cm) + <i>Group B strep</i> , + <i>S. aureus</i> , + <i>Prevotella bivia</i>	L. buttock: adjacent tissue transfer rotation flap, L. anteromedial thigh: CLWC, R buttock + R. posterior thigh: FC advancement flap Complications: none
8 30,F	6/30/2022	Lower back (70cmx15cmx8cm), Posterior neck (12cmx6cmx6cm) + <i>Group B strep</i> , + <i>Actinomyces</i> , + <i>Klebsiella</i>	Lower back: bilateral buttock+ lower back FC advancement flap, Posterior neck: CLWC Complications: none
9 24,F	7/7/2022	L. axilla (25cmx10cm) + <i>Proteus mirabilis</i> , + <i>Enterococcus</i>	L. axilla: FC advancement flap Complications: none
10 62,M	7/12/2022	L. buttock (25cmx10cm) and bilateral thighs + <i>Pseudomonas aeruginosa</i>	L. superior buttock: FC advancement flap, L. buttock at thigh: inferior FC advancement flap, medial L. buttock: STSG + negative pressure wound therapy dressing Complications: none
11 42,F	7/18/2022	R. thigh, groin, (15cmx5cm) pubis, perineum and vulva (11cmx6cm) + <i>Gram (+) rods</i> , + <i>Actinomyces</i> + <i>Bacteroides pyogenes</i>	R. thigh: Inguinal & perineal complex-FC advancement flap from thigh, L. thigh; FC advancement flap Complications: none
12 67,F	8/30/2022	R. thigh, groin, pubis, perineum and vulva (22cmx7cm) + <i>Proteus mirabilis</i> , <i>Group B strep</i> , + <i>Bacteroides fragilis</i>	R. thigh, groin, pubis, perineum & vulva: Adjacent tissue transfer flap + CLWC
13 37,F	9/12/2022	R. axilla (12cmx6cmx2.5cm) + <i>Finogoldia magna</i> , + <i>Actinomyces</i> , + <i>Cutibacterium acnes</i>	R. axilla: FC advancement flap + reconstruction w/ R. chest wall FC advancement flap Complications: none
14 68,F	11/28/2022	R. Buttock (12cmx8cm) + <i>Gram (-) rods</i>	R. buttock: FC advancement flap CLWC Complications: none
15 54,F	12/12/2022	L. axilla + L. breast (20cmx8cm), L. arm: + <i>Prevotella melaninogenica</i>	L. breast, chest & axilla: FC flap, STSG, CLWC Complications: none
16 47,M	12/12/2022	R. Buttock (6cmx3cm) + lower abdomen (10.5cmx5cmx4cm) + <i>Alpha streptococci</i>	Lower abdomen: local FC flap, R. buttock: local FC flaps Complications: none
17 25,M	1/3/2023	Bilateral thighs + small scattered areas, R. axilla (12cmx6.5cm), L. axilla (5cmx2.5cm) + <i>Finogoldia magna</i>	R. inguinal: CLWC, L. inguinal: CLWC, R. thigh: CLWC, L. thigh: CLWC, mons pubis & proximal penis: CLWC, scrotal abscess I&D, R. axilla: CLWC and local FC flap, L. axilla: CLWC Complications: none
18 41,F	1/3/2023	Posterior L. thigh + L. buttock (total 28cmx37cm), L. posterior perineum (8cmx5cm) + <i>Gemella morbillorum</i> , + <i>Diphtheroids</i>	Recycled skin technique (total 500cm <sup>2</sup> ) Complications: Takeback POD 0 for control of minor surgical site bleeding
19 26,M	1/5/2023	Posterior neck (13cmx5cm) + <i>Finogoldia magna</i> , + <i>Proteus mirabilis</i>	Posterior neck: Local FC flap Complications: none
20 23,F	1/5/2023	R. axilla (8cmx4cm), L. axilla (8cmx3.5cm) + <i>Proteus mirabilis</i>	R. axilla: thoracic FC advancement flap, L. axilla: thoracic FC advancement flap Complications: none
21 37,F	1/17/2023	R. axilla (12x8cm), L. axilla(12cmx7cm) + <i>Propionibacterium granulosum</i> , <i>Finogoldia magna</i> , + <i>Actinomyces</i>	R. axilla: FC advancement flap, L. axilla: FC advancement flap Complications: none

### OBJECTIVE

Outline a comprehensive treatment plan with high surgical success rates for Hurley Stage III Hidradenitis Suppurativa surgery using pHA preserved irrigation solution for wound bed preparation and varied reconstructive surgical techniques that have led to low recurrence and high surgical success rates.

### METHODS

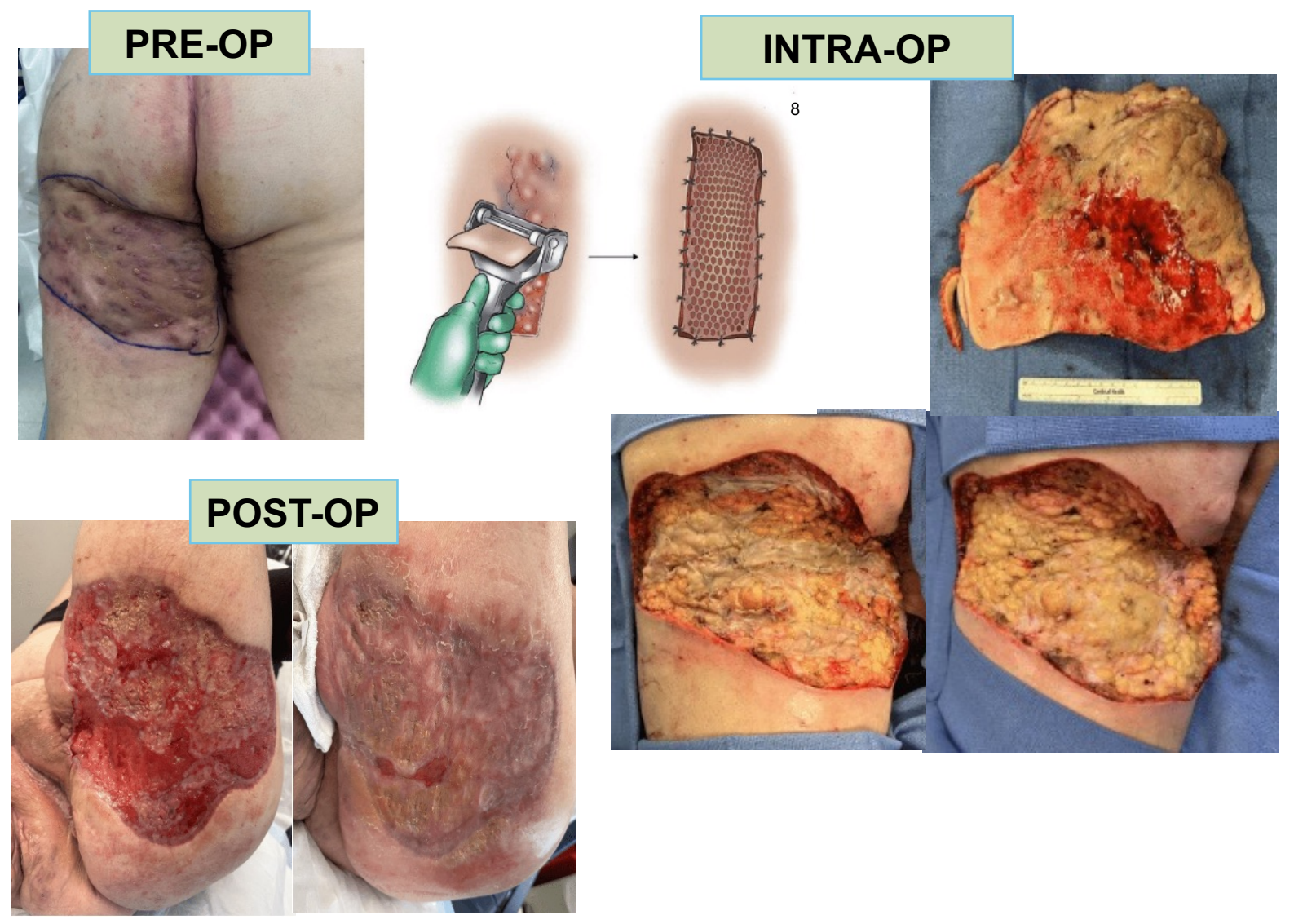
- A retrospective chart review was conducted on all 21 cases of Hurley Stage III HS performed by a single plastic surgeon that required surgical excision and plastic surgical complex closure or flap reconstruction over a 12-month period
- All surgical excisions and complex reconstructions were performed by a single plastic surgeon.
- pHA preserved wound cleanser was used for surgical wound bed preparation before wound closure in all cases.
- Surgical closure technique varied depending on HS lesion location and size.

Table Key: R= right, L= left, FC= fasciocutaneous, STSG= split-thickness skin graft, CLWC= complex layered wound closure

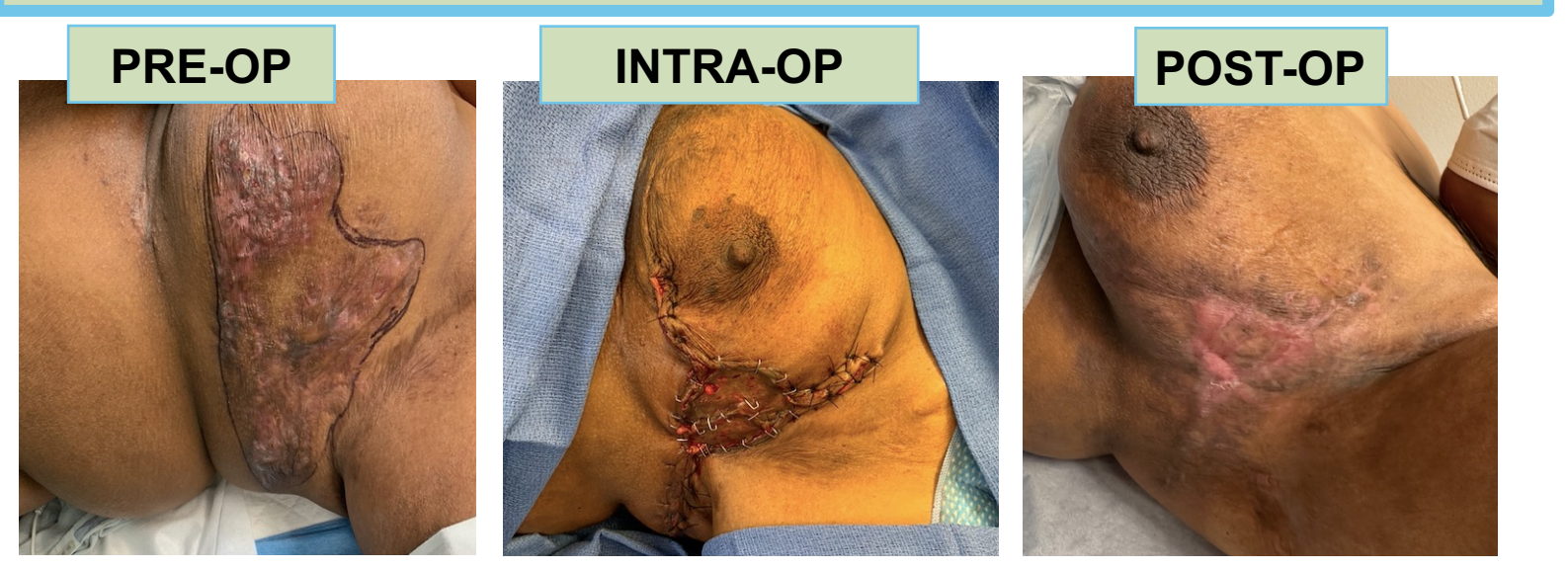
### RESULTS

- 18 patients with 39 total regions of hidradenitis requiring surgical excision and plastic surgical wound reconstruction.
- Wound sites: thigh (11/39), axilla (9/39), and groin (4/29)
- Reconstructive techniques: complex wound closure (36/39), local fasciocutaneous flaps (29/39), skin grafts (3/39) with 2 recycled skin grafts
- Microorganisms from operative cultures: group B strep (5), actinomyces (4), and finogoldia magna (4).
- Disposition: 14 patients discharged same day, 4 admitted, 2 underwent reoperation (1 for hematoma, 1 for superficial bleeding)
- All patients healed from HS excision and reconstruction (1 patient with minor recurrence of HS at two operative sites)

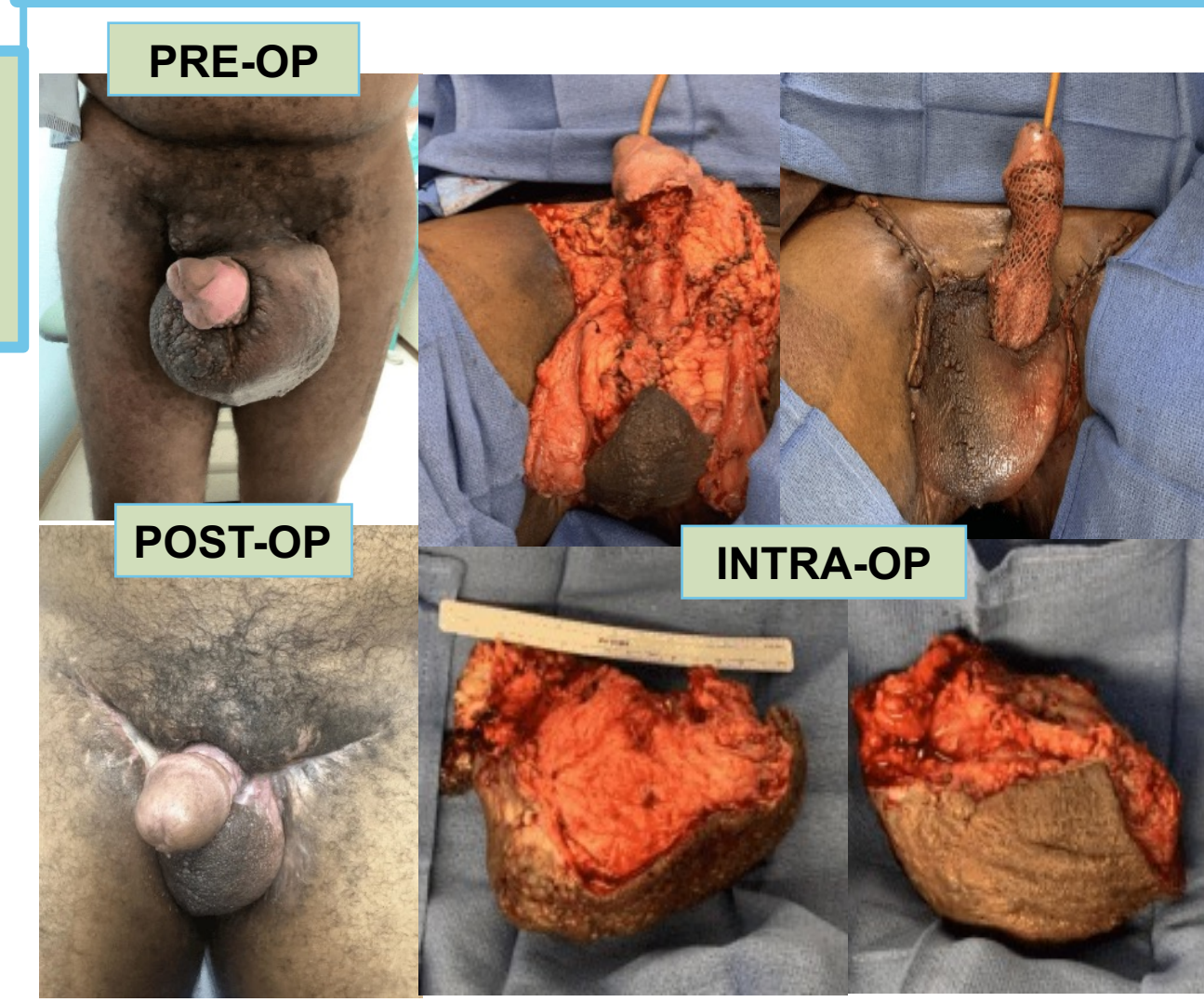
### CASE 1: 41 y.o. F with Type II DM, severe psoriasis on infliximab, and a 15-year hx of HS who presented to the ED for acute thigh hemorrhage from region of tunneled HS. Surgical closure with recycled skin graft technique.



### CASE 2: 54 y.o F with a hx of morbid obesity and Type II DM with L. axillary and L. breast HS. Surgical closure with fasciocutaneous flap and STSG techniques.



### CASE 3: 43 y.o. M with a 20-year hx of recurrent HS with 5 prior HS resections. Pt with massive scrotal edema (approximately 10 lbs) and disfiguring penile lymphedema. Grade III HS present on scrotum/bilateral groin. Reconstruction with fasciocutaneous advancement flap (13cmx13cm) based on bilateral inferior superficial epigastric arteries and layered complex closure.



### CONCLUSIONS

Severe hidradenitis suppurativa excision, irrigation with pure hypochlorous acid (pHA) preserved solution, and perioperative care were similar among patients but reconstructive procedure selection remained variable. High surgical success rates were seen with this integrated protocol. Wound bed preparation with pHA solution is an effective technique for improving outcomes after excision and reconstruction of hidradenitis suppurativa.

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