

Does Acne Surgery Have a Role?

A look at the advantages and disadvantages of comedo extraction.

By Noah Scheinfeld, M.D.

Among the most common dermatological surgical procedures are acne surgery/comedo extraction (CPT code 10040) and milia extraction/destruction (CPT codes 17110/17111). Although these codes are commonly used,¹⁻⁸ a comprehensive discussion of all aspects of acne surgery is lacking. To make a start at evaluating the place of these procedures in the dermatological armamentarium, this article will review data available on these procedures on the Internet and on PubMed.¹⁻²⁷

Defining Comedones — the Targets of Acne Surgery

Acne surgery involves comedo extraction of:

- **Open comedones** — pores containing keratin plugs with black tops, “black heads”
- **Closed comedones** — pores containing keratin plugs with white tops that are often more firmly embedded than open comedones, “white heads.”

Open and closed comedones are not commonly inflamed, but they can be inflamed. Milia are small cysts whose diameter is no larger than the ostia of a pore and are likely best thought of as a variant on a continuum with closed comedones.

History and Types of Comedo Extractors

The primary instrument for acne surgery is the comedo extractor. Comedo extractors were first used in 1873. This

device was first created by Dr. Henry Piffard and later was modified a number of times until it attained its current form.⁹

The most commonly used comedo extractor is the **Schamberg expressor**.¹⁰ Its ends are slightly curved with an elongated opening for passage of comedo contents with a ribbed, central portion to help ensure a secure grasp. The **Unna expressor** possesses ends that are slightly angled with oval cups close to the tips and an aperture smaller than the Schamberg expressor. **Walton and Saalfeld expressors** each have an oval cup-shaped aperture-punctured end on one side and a lancet (used to open closed comedones) on the other. The **Zimmerman-Walton expressor** modifies the Walton model with a cupped end and a tapered end that can contain a disposable 30-gauge needle. In surgical catalogs similar models are sold under the names of various dermatologists who fashioned particular models. (See **Table 1**.)¹¹ Prices for comedo extractors made for dermatologists range from \$15 to \$40.

Historically, various implements have been used as comedo/milia extractors including: paper clips, safety pins and syringes.¹²⁻¹⁵ The comedones of Favre-Racouchot disease (FRD), a common disease characterized by solar elastosis and large open comedones and cysts, can be extracted using standard dissecting forceps without complications or discomfort.⁸

Payment for Acne Surgery

Some healthcare insurance companies including Medicare pay for acne surgery and related treatments that are “medically necessary.” One insurance company’s policy language relating to insurance company payment of acne surgery states that it pays for “any” of the following procedures as medically necessary for the treatment of active acne vulgaris:

- manual comedone extraction for non-inflammatory comedones.
- intralesional injections of corticosteroids (e.g., triamcinolone acetate) for large nodules.
- incision and drainage or opening and removal of cysts or pustules.
- cryotherapy/cryosurgery (e.g., liquid nitrogen, acetone slush, carbon dioxide [CO₂]) for isolated inflammatory nodular lesions that fail to respond to topical and systemic medication therapy.
- light cautery/electrocauterization or CO₂ laser for multiple macrocomedones (e.g., microcystic acne, whiteheads greater than 1.5 mm in diameter) that fail to respond to topical and systemic medication therapy.

Technique of Acne Surgery

The *Skin Therapy Letter* dated August 1996¹ described the technique for performing acne surgery. “Open comedones (blackheads) are usually directly extracted with a comedo extractor, while closed comedones (whiteheads) must usually be

punctured with a sharp blade or point before the extraction is performed.

“It must be noted that comedo extraction can be uncomfortable and even painful and occasionally can lead to dyspigmentation and, even less commonly, to scarring.”

Benefit/Cost Ratio of Acne Surgery — The Argument That the Costs Are Greater Than the Benefit

Controversy exists as to whether the benefits of acne surgery outweigh its risks. Maddin in 1984⁶ and 1996¹ questioned the utility of acne surgery. In his later 1996 article, he cited Jansen and Plewig’s histopathological data that conclude that acne surgery did not demonstrate that it greatly influenced acne’s course of the disease and sometimes resulted in scarring.^{1,7}

In 1995, Jansen and Plewig⁷ reported a clinical and histopathological study. In the study, comedones were squeezed out with comedo extractors and immediately studied. They examined skin biopsies taken from the sites of acne surgery 2 to 20 minutes afterward, 1 hour later, and 1 to 105 days after such surgery had taken place. Jansen and Plewig stated that even when comedones were carefully extracted, common histopathological features of acne surgery sites included epithelial defects and inflammatory and granulomatous foreign-body reactions. Moreover, even when not visually evident, inflammatory reactions and/or scarring were always present at the acne surgery sites. In almost all cases, unless the epithelial capsule of the comedo was extracted during surgery, during the extraction, comedones started to return and became visible within 4 to 6 weeks. However, the comedonal epithelium was rarely totally expelled or the follicle and comedo permanently removed.

Benefit/Cost Ratio of Acne Surgery — The Argument That the Benefits Are Greater with Surgery

Most dermatologists I have spoken with have not encountered the scarring or permanent pigmentary alteration after using acne surgery that Maddin, Jansen and Plewig discussed.

Table 1. Specific Eponymic Names of Comedo Extractors

EPONYMIC TYPE OF EXTRACTOR	DESCRIPTION
Blau Comedo Extractor	Comedo extractor with lancet
Saalfeld Comedo Extractor — 4.25", with acne lancet, professional pattern	Comedo extractor with lancet
Saalfeld Comedo Extractor — 5.75", 14.6 cm, with acne lancet, professional pattern	Comedo extractor with lancet
Shalita Expressor — 1.5-mm head	Comedo extractor with cupped end
Shalita Expressor — 2.5-mm head	Comedo extractor with cupped end
Shalita Expressor — Double Ended, 1.5 mm/2.5 mm	Comedo extractor with two cupped ends
Shalita Expressor — 1.5 mm, with set screw for Hagedorn needles	Comedo extractor with cupped end and place for Hagedorn needles and with a slotted cup
Shalita Expressor — 2.5 mm, with set screw for Hagedorn needles	Comedo extractor with cupped end and place for Hagedorn needles and with a slotted cup
Walton Comedo Extractor — 6", spear point with cover	Comedo extractor with lancet
Orentreich Comedo Extractor — 6", round handle with needle holder	Comedo extractor with cupped end
Schamberg Comedo Extractors — 3.75"	Small-, fine- or square-crippled loops at ends
Unna-Sobel Comedone Extractors — 1-mm and 1.5-mm apertures	Comedo extractor with two cupped tapered ends

Comedo extraction done at weekly intervals leads to faster resolution of lesions, according one dermatologist.⁴ Jonathan Nevin Yu, in a digest of comments on guidelines for acne treatment assembled from the dermatology online forum Dermchat in December of 1996, discussed Maddin’s 1996 article and noted that:

“We have seen a lot of acne patients and performed thousands of comedo removals on each of them and found results superior as compared to just applying topicals. We have not seen a patient develop any scarring. We have been using the Robbins extractor 1.5 and 2.5. Marked improvement just after one visit [was noted] and our patients are very happy.... Comedo extraction with topicals, I believe, works hand in hand in treating acne.”

Also in Dermchat, dermatologist, Mark Naylor discussed Maddin’s 1996 article and noted:

“I have always been of the opposite opinion as far as open comedones (“blackheads”) are concerned, e.g., physical extraction done properly is

better than drug therapy (certainly faster). The opening of the comedo has to be large enough to easily deliver the plug; if you do it on small ones, you will see a lot of inflammation and probably won’t be able to get them out anyway. Drug therapy with retinoids is probably the treatment of choice for closed comedones due to acne. Milial cysts usually have to be removed surgically (even if it is just extraction with an 18-gauge needle for a scalpel and a comedo extractor.”

There also appears to be a role for ablation of closed comedones in acne surgery.^{19,20}

So, Does Acne Surgery Have a Role?

The comments of Naylor and Yu are illustrative. While Maddin’s arguments are well reasoned, it is important to note that all acne treatments — with the exception of isotretinoin, which permanently shrinks the sebaceous gland by up to 90% — wear off in 4 to 6 weeks (and in fact, they often take 4 to 6 weeks to take effect).

In addition, oral and topical antibiotics and topical retinoids, as well as benzoyl

peroxide do not permanently change the skin of acne patients.

Acne treatments are already self-limiting by nature because the epidermis turns over every 3 to 4 weeks. In fact, the clinical course of the pore in Favre-Racouchot disease suggests that over time pores dilated by keratin plugs become dilated and patulous. So, by preventing the prolonged dilation of a pore, the transformation of a pore with a dilated ostia to a pore with a permanently dilated ostia can be prevented.

It would seem to me, based on my practice, discussion with dermatologists and review of the literature that judicious, focused acne surgery *does* have a role in the treatment of acne. Its effect is immediate and gratifying to patients and dermatologists, unlike medical treatments for acne.

Acne surgery appears best integrated with topical treatments, in particular topical retinoids (which normalize follicularization and result in opening closed comedones and keeping pores open).

The histological effects that Plewig noted did not indicate that visible scarring occurred but that scarring occurred in the healing process *on a microscopic level*.

While seemingly cosmetically and perhaps medically useful, the role of acne surgery needs to be more fully defined. As in so many areas of dermatology and medicine, a well-designed clinical study assessing microscopic, visible and patient satisfaction effects would be useful in fully assessing the role of acne surgery. ■

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DISCLOSURE: Dr. Scheinfeld has no conflicts of interest with any of the subject matter discussed in this article.

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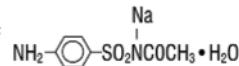
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DESCRIPTION Sodium sulfacetamide is a sulfonamide with antibacterial activity while sulfur acts as a keratolytic agent. Chemically, sodium sulfacetamide is N-(4-aminophenyl) sulfonyl-acetamide, monosodium salt, monohydrate.

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CLINICAL PHARMACOLOGY Sodium sulfacetamide exhibits antibacterial activity. The most widely accepted mechanism of action of sulfonamides is the Woods-Fildes theory which is based on the fact that sulfonamides act as competitive antagonists to para-aminobenzoic acid (PABA), an essential component for bacterial growth. While absorption through intact skin has not been determined, sodium sulfacetamide is readily absorbed from the gastrointestinal tract when taken orally and excreted in the urine, largely unchanged. The biological half-life has variously been reported as 7 to 12.8 hours.

It is estimated that 1% of topically applied sulfur is absorbed. Although the exact mode of keratolytic activity of sulfur is unknown, it is reported to result from the interaction of sulfur with the cysteine content of keratinocytes. In combination with sulfacetamide, sulfur has been reported to inhibit the growth of Propionibacterium acnes thereby reducing the associated inflammation.

INDICATIONS CLARIFOAM EF Emollient Foam is indicated in the topical control of acne vulgaris, acne rosacea and seborrheic dermatitis.

CONTRAINDICATIONS CLARIFOAM EF Emollient Foam is contraindicated for use by patients having known hypersensitivity to sulfonamides, sulfur or any other component of this preparation. CLARIFOAM EF Emollient Foam is not to be used by patients with kidney disease.

WARNINGS Although rare, hypersensitivity reactions to products containing sodium sulfacetamide may occur, including Stevens-Johnson syndrome and exfoliative dermatitis. Systemic toxic reactions such as agranulocytosis, acute hemolytic anemia, purpura hemorrhagica, drug fever, jaundice, and contact dermatitis indicate hypersensitivity to sulfonamides. Particular caution should be employed if areas of denuded or abraded skin are involved. FOR EXTERNAL USE ONLY. Keep away from eyes. Keep out of the reach of children. Contents under pressure. Do not puncture or incinerate container. Do not expose to temperatures above 120°F (49°C).

PRECAUTIONS General: The object of this therapy is to achieve desquamation without irritation, but sodium sulfacetamide and sulfur can cause reddening and scaling of epidermis. These side effects are not unusual in the treatment of acne vulgaris, but patients should be cautioned about the possibility. If irritation develops, use of the product should be discontinued and appropriate therapy instituted. Patients should be carefully observed for possible local irritation or sensitization during long-term therapy.

Information for Patients Avoid contact with eyes, eyelids, lips, and mucous membranes. If accidental contact occurs, rinse with water. If excessive irritation develops discontinue use and consult your physician.

Carcinogenesis, Mutagenesis and Impairment of Fertility Long-term studies in animals have not been performed to evaluate carcinogenic potential.

Pregnancy Category C. Animal reproduction studies have not been conducted with CLARIFOAM EF Emollient Foam. It is also not known whether CLARIFOAM EF Emollient Foam can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. CLARIFOAM EF Emollient Foam should be given to a pregnant woman only if clearly needed.

Nursing Mothers It is not known whether sodium sulfacetamide is excreted in the human milk following topical use of CLARIFOAM EF Emollient Foam. However, small amounts of orally administered sulfonamides have been reported to be eliminated in human milk. In view of this and because many drugs are excreted in human milk, caution should be exercised when CLARIFOAM EF Emollient Foam is administered to a nursing woman.

Pediatric Use Safety and effectiveness in children under the age of 12 have not been established.

ADVERSE REACTIONS Although rare, sodium sulfacetamide may cause local irritation.

DOSAGE AND ADMINISTRATION Prime Container: Upon initial use only, prime the CLARIFOAM EF Emollient Foam aerosol can by holding CLARIFOAM EF Emollient Foam upright, direct away from the patient, and depress the actuator for 3 to 5 seconds or until foam begins to dispense. **WASH-OFF APPLICATION:** Cleanse affected skin thoroughly and pat dry before each application. Shake well before using. Holding can upright, dispense a small amount of CLARIFOAM EF Emollient Foam onto the fingertips. Massage the dispensed foam into the affected area and wait 10 minutes. Rinse thoroughly with water and pat dry. Treat the affected area 1 to 3 times daily, or as directed by a physician. **LEAVE-ON APPLICATION:** Cleanse affected skin thoroughly and pat dry before each application. Shake well before using. Holding can upright, dispense a small amount of CLARIFOAM EF Emollient Foam onto the fingertips. Massage the foam into the affected area 1 to 3 times daily, or as directed by a physician. Wipe off any excess.

HOW SUPPLIED CLARIFOAM EF Emollient Foam is supplied in a 60 g (INCD 16781-154-60) aluminum can. Store between 15° and 30°C (59° and 86°F). Protect from freezing. Store upright. Manufactured for: Onset Therapeutics, Cumberland, RI 02864. PATENT PENDING

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