Rhinophyma: Review and Update
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Learning Objectives: After studying this article, the participant should be able to discuss: 1. Clinical features and anatomy of rhinophyma. 2. The etiology and epidemiology of rhinophyma. 3. Associated diagnosis that can complicate rhinophyma. 4. Common nonsurgical and surgical therapies for rhinophyma. 5. A safe and integrated treatment plan for the patient with rhinophyma.

Rhinophyma may have been first recognized in ancient Greece and Arabia.1,2 Elliott et al. and Matton et al. credit Hebra with naming the disease in the mid-nineteenth century.3,4 The name is derived from the Greek rhis, for nose, and phyma, meaning growth.

Many imaginative terms have been used to describe the erythematous, hypertrophied, and inflamed nose that typifies rhinophyma. In the past, the deformity has been compared with tuberous vegetables as well as to animal snouts. The terms “rum blossom” and “whiskey nose” have permeated our society. These terms, and their association with famous persons such as W. C. Fields, have helped to perpetuate the common association of rhinophyma with alcoholism. Although the facial flushing caused by vasoactive substances such as caffeine and alcohol may exacerbate the condition, rhinophyma is more likely a severe form of acne rosacea.

Virchow is credited by Wiemer as having correctly associated rhinophyma with acne rosacea in 1846.1 Over the last 40 years, numerous reports have supported the progression of rosacea to acne rosacea and the final manifestation of rhinophyma.1,5-7 As a result, medicines that have been helpful in the treatment of rosacea are now being used to augment the predominantly surgical approach to rhinophyma.

Rebora describes four stages of rosacea that culminate in rhinophyma.6 The first stage is frequent facial flushing. Wilkin notes that rosacea “is essentially a cutaneous vascular disorder.”8 This increased vascularity is postulated to lead to a second stage characterized by thickened skin, telangiectasias, and persistent facial erythema, or erythrosis.1,6 A subset of these patients will progress to a third stage: acne rosacea. Acne rosacea is characterized by erythematous papules and pustules of the forehead, glabella, malar region, nose, and chin. Pustules can sometimes be seen in other areas, including the chest, back, and the scalp of balding men.6,9 Wilkin classifies these first three stages as prerosacea, vascular rosacea, and inflammatory rosacea.8

Rhinophyma is the fourth stage of evolving rosacea.6,8 The group that develops rhinophyma is smaller again than the papular-pustular group. The nose is usually the only structure affected, but mentophyma, otophyma, and zygophyma have been described.6,10,11 Grossly, the nasal skin is erythematous with telangiectasias, sometimes purple in color. In severe cases, the skin can have pits,
fissures, and scarring. Inspissated sebum and bacteria result in chronically infected skin and, often, an unpleasant odor. The nasal tip is preferentially enlarged. The nasal dorsum and side walls are involved, but to a lesser degree. As the nasal skin hypertrophies, the aesthetic subunits of the nose are distorted, merged, and obliterated. Patients often suffer from secondary nasal airway obstruction. Tumorous growths can develop in late, nodular forms of the disease, resulting in dramatic cosmetic deformity. In the vast majority of cases, the bony and cartilaginous frameworks are unaffected.

Marks proposes a mechanism for rhinophyma evolution that begins with vascular instability in the skin. Loss of fluid into the dermal interstitium and matrix is postulated to initiate inflammation and fibrosis. The nasal skin thickens concurrently with dermal and sebaceous gland hyperplasia. Dilated sebaceous ducts become cystic and plugged with sebum. Fibrosis and acanthosis are prominent. A lymphocytic infiltrate is seen as well. All of these histologic features are seen in acne rosacea as well, further supporting the link between the precursor condition and rhinophyma (Fig. 1). Several authors have observed different forms and stages of progression of rhinophyma. Based on a study of 17 patients with rhinophyma, Aloi et al. observed two distinct forms of the disease. The first group clinically appeared consistent with common rhinophyma. The second group had more severe clinical features and different histology. The common form showed the usual histopathologic changes described above. In contrast, the severe form displayed less prominent inflammation, a more thickened dermis, thinner epidermis, actual loss of recognizable sebaceous units, and more diffuse dermal telangiectasias. Aloi et al. propose that in severe rhinophyma, the sebaceous units may be obliterated by persistent edema and fibrosis. The authors remarked that the histopathologic findings in severe rhinophyma were similar to lymphedema and elephantiasis. Interestingly, there appeared to be no correlation between disease severity and duration in Aloi et al.’s series.

In an excellent review of this subject, Freeman reviewed 55 patients with rhinophyma, and devised a five-part classification based on severity of deformity. We have found this classification system useful in describing the variability of deformity in patients with rhinophyma (Fig. 2).

**Epidemiology and Etiology**

Rosacea is common, with a reported prevalence between 0.5 and 10 percent. Rosacea is thought to be more common in women; however, this may be inaccurate if it is true that women with rosacea seek medical attention earlier in their course than similarly affected men. In contrast, the progression to facial skin thickening and rhinophyma is more common in men. The ratio of male to female patients with rhinophyma ranges from 5:1 to 30:1. The increased incidence in men may be due to androgenic influence. Thiboutot et al. note that 5-alpha reductase activity is higher in acne-prone sebaceous units relative to sebaceous units in non-acne-prone skin. They do not specifically relate this finding to rosacea or rhinophyma, however. Acne rosacea and rhinophyma are seen more often in persons of English and Irish descent than in those of African descent. Rhinophyma may be rare in Asians, with only 20 reported cases in the Japanese literature.

The early form of rosacea, characterized by increased facial vascularity, begins in the second and third decades. Patients with chronic erythrosis and acne rosacea are generally in their fourth to fifth decade. In both Fisher’s and Matton et al.’s series and at our institution, the average age of patients operated on for rhinophyma was greater than 50 years. Nevertheless, cases of rhinophyma in patients younger than 30 years have been reported.

There appears to be a significant familial component to rosacea. However, the influ-

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**Fig. 1.** Histology of rhinophyma. This is characterized by sebaceous hyperplasia, inflammation, and acanthosis.
Classification of Rhinophyma*
(Based on Severity of Deformity)

Early Vascular Type
Diffuse Enlargement – Moderate
Localized Tumor – Early
Diffuse Enlargement – Extensive

Diffuse Enlargement – Extensive with Localized Tumor


ence of heredity on rhinophyma remains unclear. In Freeman’s series of 55 patients with rhinophyma, 12 patients reported close family members with the disease. Matton et al. reported two brothers who were similarly afflicted. Still, few papers exist that explore the possibility of a familial or hereditary component in rhinophyma.

The importance of increased skin vascularity and chronic inflammation in the progression from rosacea to rhinophyma is generally accepted. The nature of irritants that may incite this progression is less clear. Although the association of alcoholism and rhinophyma results in unfair stigmatization of persons with the disease, some authors support this link. Eighteen of Freeman’s 55 patients with rhinophyma reported an alcoholic history. In contrast, Wiemer suggests that facial flushing secondary to vasoactive foods and drink, including alcohol, is a coincidental phenomenon seen in most people, and may have no influence on the evolution of rhinophyma.

Rebora states that the facial flushing seen in patients with rosacea secondary to certain foods, drink, and emotional stress is more pronounced and longer lasting than the flushing seen in persons without rosacea. Ayers and Anderson proposed a link between the skin mite *Demodex folliculorum* and acne rosacea in 1932. Bacterial colonization within plugged sebaceous glands is a consistent finding in rhinophyma; but it is unclear whether this is primary or secondary in the disease process.

Investigators began to study a possible association of rosacea with *Helicobacter pylori* when it was observed that many patients with the skin disorder also complained of gastrointestinal symptoms. The hypothesis that *H. pylori* could be an infectious etiology of rosacea has not been supported by recent studies. Articles by Jones et al. and Sharma et al. showed no difference in rates of *H. pylori* seropositivity between patients with rosacea and controls. In a randomized prospective trial, Bamford et al. showed that empiric treatment of *H. pylori* did not improve outcome in patients with rosacea.

**Differential Diagnosis and Pitfalls**

The distinctive hypertrophied, erythematous, and nodular nose of rhinophyma is generally an easy diagnosis upon inspection. However, there are numerous reports in the literature of patients who were diagnosed with rhinophyma, only to receive a different diagnosis on the pathology report.

The deformity of rhinophyma can complicate accurate examination of the nasal skin. As a result, malignancies can go unnoticed within the hypertrophied skin. Acker and Helwig suggested a 3 to 10 percent incidence of occult basal cell carcinoma in patients with rhinophyma. In their series of 47 patients, they also found one adenoid squamous cell carcinoma and one sebaceous adenoma. Broadbent and Cort report two elderly patients with longstanding rhinophyma complicated by high-grade squamous cell cancer. Sebaceous carcinoma and angiosarcoma have also been found in the rhinophymatous nose.

Not only can additional pathology hide within the rhinophymatous nose, but cancer and other disorders can also actually mimic the disease. Keefe et al. reported a case of excised rhinophyma in an elderly man that was found on pathologic examination to be entirely composed of basal cell cancer. Nesi and Lynfield reported a case of metastatic lung cancer to the nose which was thought initially to be rhinophyma. Granuloma eosinophilicum, sarcoidosis, and lymphoma have been found to mimic rhinophyma as well.

**TREATMENT**

**Nonsurgical Therapy**

Today, based on proven efficacy, topical and oral antibiotics and retinoids are the mainstay in the treatment of rosacea. Goldstein et al. showed in their study that patients with severe acne treated with isotretinoin (Accutane, Hoffman-LaRoche, Nutley, N. J.) showed
significant clinical improvement, as well as decreased sebum production and sebaceous gland size that persisted well beyond the cessation of therapy. Based on the observed sebaceous changes in rosacea, others have studied the effects of retinoids on this disease. Ertl et al.’s study demonstrated the individual efficacy of topical tretinoin (Retin-A, Ortho Pharmaceuticals, Raritan, N. J.) and low-dose oral isotretinoin in the treatment of severe rosacea. While acknowledging the efficacy of Retin-A, Wilkin cautions that the sensitive, erythematous skin of rosacea is easily irritated by Retin-A. He notes that this medicine may actually worsen the erythema and the disease itself by stimulating angiogenesis. Rebora advocates oral Flagyl (Pharmacia, Chicago, Ill.) as a first-line agent with tetracycline and Accutane (oral) as second-line agents. A potential advantage of Accutane over Retin-A is the avoidance of skin irritation.

Historically, dietary changes, combinations of vitamins, herbs, salves, mercury vapor, injection of fibrolysin, and steroids have all been used to treat rhinophyma. X-ray therapy was felt to be promising in the 1920s, when it was shown to decrease the size of sebaceous glands. But the use of x-ray therapy in the treatment of skin disorders was discredited when it was associated with secondary skin malignancies. Recently, the role of x-ray therapy in select cases of rhinophyma has been separately reassessed by Keefe et al. and Plenk. Plenk reported two cases of rhinophyma complicated by basal cell cancers that were successfully treated by punch biopsy and radiation. The author reports that both patients are free from cancer years after therapy. Photographs of these two patients seem to confirm that some aesthetic improvement is possible with biopsy and radiation alone.

No antibiotic or retinoid has been shown conclusively to halt the progression from rosacea to rhinophyma or cause regression of existing rhinophyma. Therefore, despite the advances in medical therapy for the treatment of rosacea, the mainstay of treatment for rhinophyma remains surgical.

**Surgical Therapy**

Fisher reviews how Dieffenbach excised rhinophymatous skin and closed the nose primarily in 1845. Later, in 1851, von Langenbeck performed full-thickness excision of nasal skin and allowed the surface to heal secondarily. In 1864, Stromeyer performed partial thickness excision of involved skin, allowing reepithelialization from retained sebaceous glands. Wood introduced skin grafting to the treatment of rhinophyma in 1912.

Today, a myriad of effective surgical options are available. Dermaplaning and dermabrasion have been used with impressive results for many years. Cryosurgery and heated knives and loops also have their advocates. The CO2 laser was reported by Shapshay et al. in 1980 in the treatment of rhinophyma. In 1983, Henning and van Gemert reported the use of the argon laser for this disease. Since that time laser techniques have become very popular in the treatment of rhinophyma. Greenbaum et al. reported three patients with rhinophyma who were each treated with CO2 laser on one side of their nose and with electrosurgery on the other side. The authors noted comparable results between the two modalities.

Baker acknowledges the efficacy of the CO2 laser in the treatment of facial rhytids and rhinophyma. However, he remarks, “despite the continued demand for space age laser technology, the dermabrader remains a safe and efficacious modality for the treatment of rhytids and scars.” Har-El et al. retrospectively studied 23 patients who were treated with either laser or blade excision of rhinophyma. The authors found no difference in operative time, pain, postoperative bleeding, overall complications, or subjectively graded aesthetic outcome. The authors did prefer the laser for improved intraoperative hemostasis.

Toward the goal of incorporating the precision of sharp dissection with improved hemostasis, Ducreux et al. recently used an ultrasonic scalpel to treat rhinophyma. The authors reported good hemostasis intraoperatively, as well as improved tactile control that they compared with the “sculpting of clay.” In addition, the authors report minimal tissue damage, comparable to samples of skin excised by a scalpel.

**Algorithm for Management of Rhinophyma**

Several authors have proposed treatment regimens for rosacea and rhinophyma in the dermatologic literature. Despite their differences, all seem to support a graduated approach, with appropriate preventative, topical, and oral therapies for each stage of the disease. On the basis of a literature review and
our clinical experience with rhinophyma, we propose an algorithm to help guide decision-making when assessing the patient with increased facial vascularity (Fig. 3).

When evaluating the rhinophyma patient, we begin with a detailed dermatologic history and examination. Prior or coexisting skin lesions are noted. The use of medicines such as steroids, antibiotics, and retinoids is specifically elicited from the patient.

We follow the skin evaluation with detailed rhinoplasty planning. The rhinophyma patient deserves the same critical evaluation and standardized approach as patients who undergo more traditional rhinoplasty. Therefore, we begin the nasal evaluation with the nasal history. This is followed by precise anatomic examination, photographic analysis, and final complete aesthetic analysis of the nose in relation to the face. The results of the consultation are discussed with the patient, and an individualized treatment plan is devised.

It is important to not be overly focused on the rhinophymatous abnormality and thereby ignore other contributing factors to the patient’s deformity. Clearly, patients with rhinophyma can have prior nasal trauma, bony and cartilaginous framework deformities, and other abnormalities that must be considered when planning surgery. Rhinophyma causing nasal airway obstruction is well described. However, when evaluating these patients, underlying septal deviations and turbinate hypertrophy must not be missed.

As extensive resection of skin is generally needed to reduce rhinophyma, it is prudent to stage the operation when correction of combined rhinophymatous and framework abnormalities is planned. Skin slough secondary to ischemia after rhinophyma surgery has been described.

Regarding the hypertrophy of rhinophyma, we prefer the combination of partial thickness skin excision/dermaplaning with a scalpel fol-
lowed by dermabrasion for final contouring. These instruments allow fine control while sculpting the tissue and therefore reproducible results. In most cases, hemostasis has not been a problem when using pressure and judicious electrocautery. We use the CO₂ laser primarily for additional hemostasis when needed, not for additional sculpting.

Based on the reported association of skin cancer with rhinophyma and the possibility of rare disorders that mimic the disease, we send all excised rhinophymatous skin for pathologic analysis. Despite the fact that the laser can cut and excise as well as ablate tissue, we question whether use of the laser as the primary treatment modality for rhinophyma allows adequate tissue sampling for pathology. Certainly patients who report a recent change or rapid enlargement of a rhinophymatous nose should be encouraged to have surgery regardless of their aesthetic concerns.

We consider full-thickness skin excision and grafting only in the context of severe nodular rhinophyma and widespread underlying malignancy. After consultation with a dermatopathologist, patients with small foci of tumor are referred to a dermatologist trained in Mohs’ surgery. Mohs’ surgery for multiple foci of basal cell cancers in the context of rhinophyma has been described.

Immediately postoperatively, we dress the raw nasal surface with antibiotic ointment and Xeroform (Sherwood-Davis & Geck, Mansfield, Mass.) gauze. We use bacitracin or Bactroban ointment (GlaxoSmithKline, Research Triangle Park, N. C.). We inform the patient to expect minimal oozing for 1 day after surgery. Beginning on postoperative day 1, the patient is asked to begin changing the dressing twice a day for 3 days, with a thin film of ointment and a single layer of Xeroform. The patient also takes a 3-day prescription of a first generation cephalosporin or another oral antibiotic that covers skin flora. At postoperative day 4, we see the patient in the office. The nasal surface should look red, with intervening pink areas of early reepithelialization. We stop the ointment on postoperative day 4 to prevent maceration. The patient is seen weekly in the office to follow healing. We have not observed problems with full-thickness skin loss or hypertrophic scarring, but patients should be followed closely for these problems postoperatively. We continue Xeroform gauze dressing changes without ointment until the nose is healed. Reepithelialization is usually complete in 2 to 4 weeks.

Although it has not been our experience, problems with wound healing and keloids have been reported when surgical therapy of rhinophyma was superimposed with isotretinoin therapy. A causal relationship between combined isotretinoin and surgical therapy and keloid formation is not conclusively proven by Zachariae’s article.

It has been shown that Accutane impairs reepithelialization in patients undergoing chemical peels. Therefore, we do not advise operating on patients with rhinophyma who are taking Accutane/tretinoin. Any patient with rhinophyma who is taking Accutane must wait at least a year after quitting the drug before surgery is safe. Also, secondary to the dermatitis that occurs with topical tretinoin, we wait 3 to 4 weeks postoperatively to begin treatment with Retin-A. However, use of Retin-A, unlike Accutane, is not a contraindication to surgery.

We advise shielding from the sun indefinitely and use of combined ultraviolet A and ultraviolet B sunscreens. Our preferred formulation is micronized, clear zinc oxide, which effectively blocks both ultraviolet A and ultraviolet B. The association of skin irritation in patients with rosacea with sunscreens containing PABA and related compounds has been reported. In addition, Nichols et al. advise the use of PABA-free sunscreens that contain dimethicone and cyclomethicone for patients with rosacea. The authors’ patients with rhinophyma have reported no problems with skin irritation secondary to use of clear zinc oxide.

CASE STUDIES

Case 1

A 54-year-old white man presented for evaluation of a slowly enlarging nasal deformity with a longstanding history of nasal airway obstruction. Facial and nasal analysis revealed adequate facial proportions. His overall complexion was ruddy, consistent with rosacea. On frontal view (Fig. 4, above), the nose was not significantly deviated; however, there was some degree of asymmetry secondary to nasal skin hypertrophy. Abnormal nasal skin nodularity contributed to the cosmetic deformity. The skin hypertrophy also created the illusion of wide bony and cartilaginous pyramids. The tip and ala were similarly widened by the thickened skin characteristic of rhinophyma. The tip overprojected significantly, again secondary to skin thickening (Fig. 4, center). The illusion of a deep supratip break was secondary to rhinophyma as well. His angle of the tip projection and columellar-lobular angle were normal. On basal view (Fig. 4, below), the patient was noted to have an abnormally long lobular portion of the tip relative...
to the columellar portion. The external nasal valves were compressed by the weight of the rhinophymatous mass. Anterior-caudal septal deviation was noted on the right. Bilateral inferior turbinate hypertrophy was noted as well. This patient had more of a localized tumor than diffuse enlargement by Freeman’s classification.13

Operative goals were to reduce the rhinophyma, to recreate and contour the aesthetic subunits of the dorsum and tip, to restore a smooth skin surface, and to correct nasal airway obstruction. The surgical plan was as follows:

1. Bilateral anterior-inferior turbinates submucosal resections.
2. Right hemitransfixion incision and resection of quadrangular cartilage and scar, preserving an adequate L-strut.
3. Partial-thickness dermaplaning of hypertrophied nasal tip and dorsal skin using a scalpel to reduce volume and restore contour and tip projection.
4. Completion of restoration of aesthetic subunits and smoothing of nodular skin with dermabrasion.

At 4 months postoperatively, our patient demonstrated complete healing of his nasal skin. The nasal skin nodularity and asymmetry were corrected. The dorsum, supratip area, lobule, and alae had restored smooth contour. The over-projecting tip was corrected on lateral views. Of note on basal views, the external nasal valves were significantly more patent postoperatively. Reduction of the rhinophymatous mass alone is responsible for this change. Nasal airway obstruction was corrected by the above, septal resection, and inferior turbinates resection.

Case 2

A 62-year-old white man presented with a severely deforming rhinophyma. He clearly had diffuse enlargement with localized tumor.13 He demonstrated the illusion of nasal framework asymmetry secondary to asymmetric growth of the rhinophyma (Fig. 5, above and center). The columellar-lobular angle was acute preoperatively because of the weight of the hypertrophied nasal skin. He also suffered from nasal airway obstruction resulting from compression of the external nasal valves (Fig. 5, below).

This patient underwent dermaplaning with a scalpel followed by dermabrasion. Postoperative views were taken 3 months after surgery. He demonstrated a more normal nasal contour, resolution of asymmetry, widening of the columellar-lobular angle, and correction of his nasal airway obstruction.

**Fig. 4.** Preoperative and 4-month postoperative views.

**Fig. 5.** Preoperative and 3-month postoperative views.
Case 3

A 55-year-old white man presented with deforming rhinophyma. Again, here is an example of diffuse enlargement with an accompanying tumor. The rhinophyma distorted the tip and supratip areas more than the dorsum. Similar to the previous cases, this patient underwent dermaplaning and dermabrasion. Photographs taken 1 year postoperatively demonstrate normal nasal contour and unveiling of normal nasal tip anatomy (Fig. 6).

The pathology from all three operations revealed sebaceous hyperplasia consistent with rhinophyma.

DISCUSSION

Rhinophyma is most likely a severe manifestation of advanced rosacea. Irritants, such as alcohol and sunlight, may contribute to the progression of the disease. Avoidance of these and other irritants has been described for patients with rhinophyma and is advocated in our treatment algorithm. Patients with all stages of rosacea, including those with rhinophyma, can benefit from varied topical and oral medicines. We favor clear zinc oxide, MetroGel (Galderma, Cranbury, N. J.), and Retin-A for our rhinophyma patients.

Again, we caution against operating on rhinophyma patients who are taking Accutane. If severe acne coexists with rhinophyma, the Accutane can be supplanted by other drugs for a year preoperatively. We would not restart Accutane until healing from surgery is complete, including full resolution of postoperative erythema.

Clearly, many surgical modalities are effective. We prefer dermaplaning followed by dermabrasion because of their simplicity and reproducibility of results. The laser is employed mainly for hemostasis when needed. We advocate complete nasal and facial aesthetic analysis, as patients with rhinophyma may have other nasal problems that would benefit from correction. However, to prevent complications related to devascularization of the nasal tip, we recommend staging the procedures if both rhinophyma sculpting and formal rhinoplasty are planned. As rhinophyma can mask an underlying malignancy, the authors send all excised tissue for pathologic analysis.

Having endured significant deformity for years, most of our patients display some degree of stoicism regarding their rhinophyma. Achieving a good result can therefore stimulate a significant improvement in the rhinophyma patient’s self-esteem.

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REFERENCES


Self-Assessment Examination follows on the next page.
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1. WHICH OF THE FOLLOWING IS THE MOST LIKELY ETIOLOGY OF RHINOPHYMA?
   A) Increased facial vascularity
   B) Alcohol abuse
   C) Ultraviolet radiation
   D) Caffeine consumption
   E) Acne rosacea

2. WHAT IS THE PREVALENCE OF ROSACEA?
   A) 0.1 to 0.5 percent
   B) 0.5 to 10 percent
   C) 15 to 20 percent
   D) 25 to 30 percent
   E) 35 to 45 percent

3. RHINOPHYMA IS MOST COMMON IN WHICH OF THE FOLLOWING ETHNIC GROUPS?
   A) African American
   B) Celtic
   C) Asian
   D) Hispanic
   E) Eastern European

4. THE MAJOR HISTOLOGICAL DIFFERENCE BETWEEN ACNE ROSACEA WITH EARLY RHINOPHYMA AND SEVERE ADVANCED RHINOPHYMA IS:
   A) Obliteration of sebaceous units
   B) Decreased dermal thickening
   C) Increased epidermal thickness
   D) Increased inflammation
   E) Decreased vascularity

5. EACH OF THE FOLLOWING HAS BEEN DESCRIBED AS AN EFFECTIVE INSTRUMENT FOR RHINOPHYMA SURGERY, EXCEPT:
   A) CO₂ laser
   B) Cryosurgery
   C) Electrocautery
   D) Ultrasonic scalpel
   E) Pulsed-dye laser