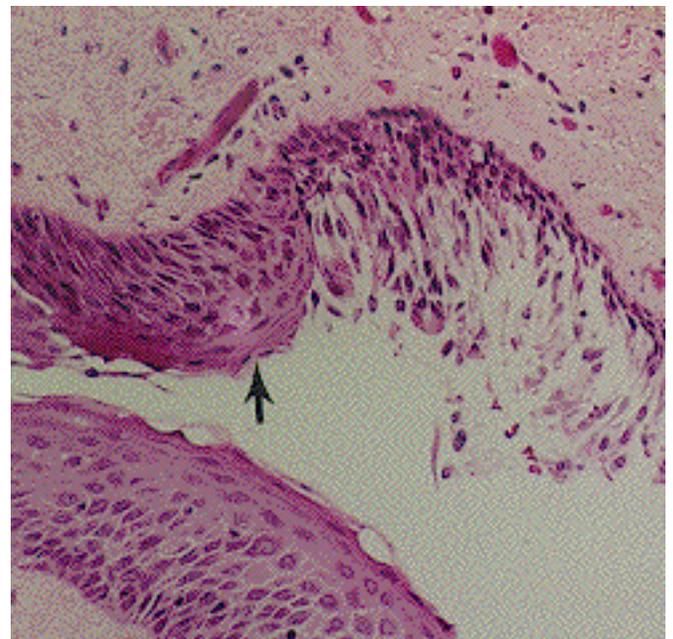


METAPLASIA

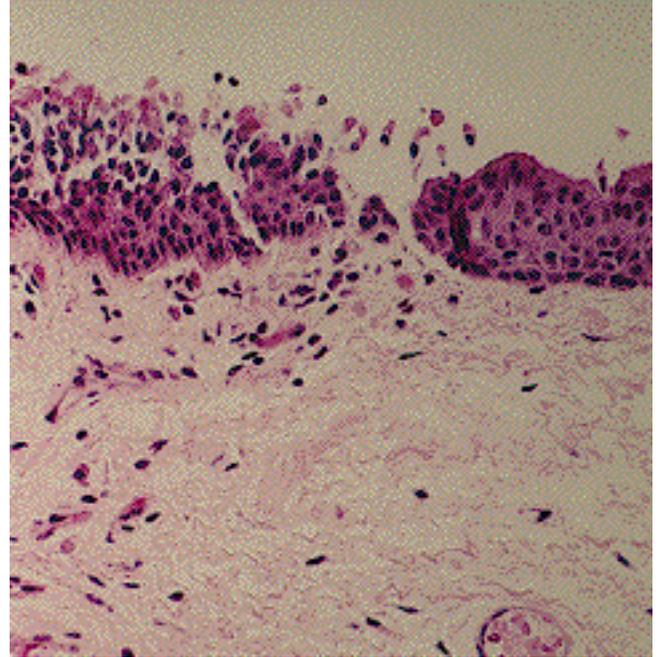
Metaplasia is the conversion of one adult differentiated cell type to another. Generally it is the result of persistent cellular trauma and serves as a protective mechanism. Thus anteriorly along the nasal septum, normal respiratory epithelium may be transformed into squamous epithelium. Or the bronchial epithelium with its ciliated columnar mucin-secreting cells may be replaced by stratified squamous epithelium with keratinization. Similar changes are common in the larynx where cigarette smoke is the common trauma. In Barrett's esophagus, squamous epithelium distal in the esophagus is replaced by epithelium resembling gastric or intestinal mucosa, presumably because this epithelium is better adapted to gastric secretion than is squamous mucosa.

In other situations the role of trauma is not apparent, e.g., osseous metaplasia in a pleomorphic adenoma.

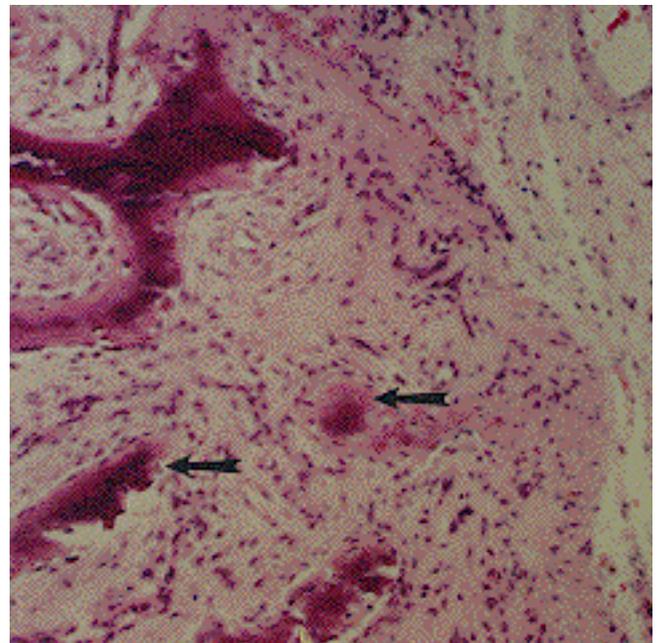
Metaplasia, larynx, showing a change from the normal ciliated columnar epithelium into squamous epithelium (arrow). The patient was a heavy smoker.

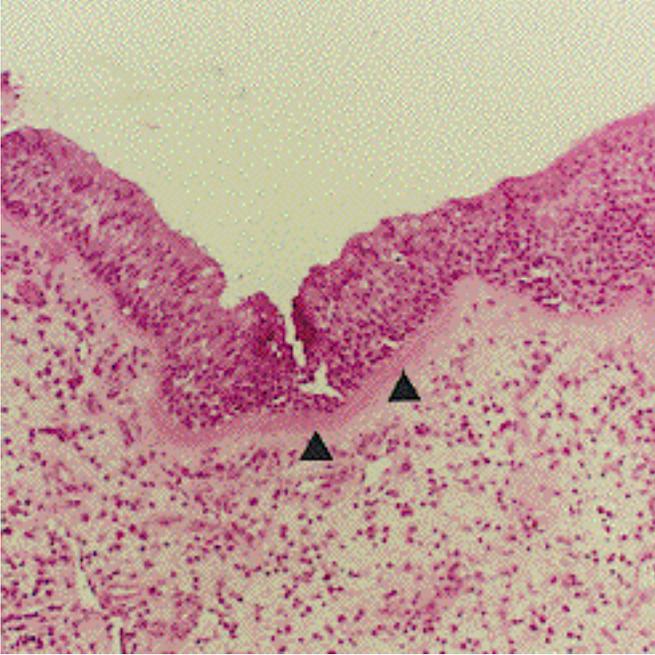


Metaplasia, larynx, with squamous mucosa replacing a columnar type.

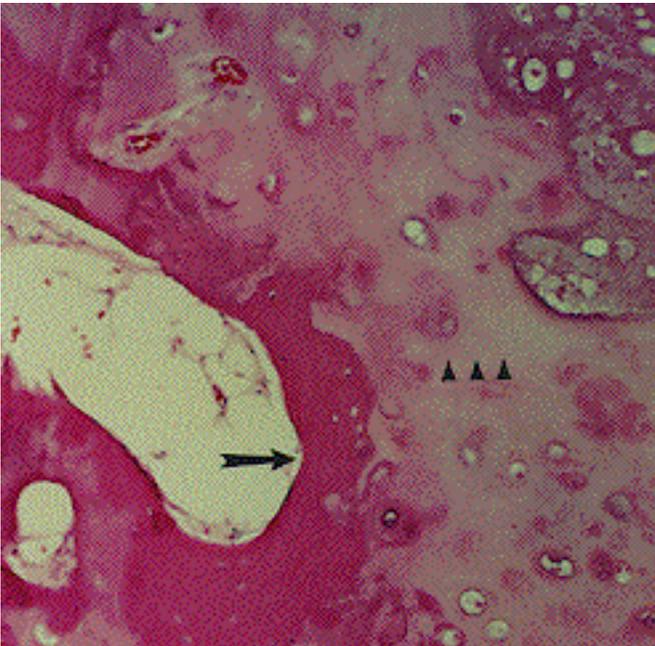


Metaplasia, mucocele, maxillary sinus. Reactive metaplastic bone formation (arrows) in tissue stripped from maxillary sinus.



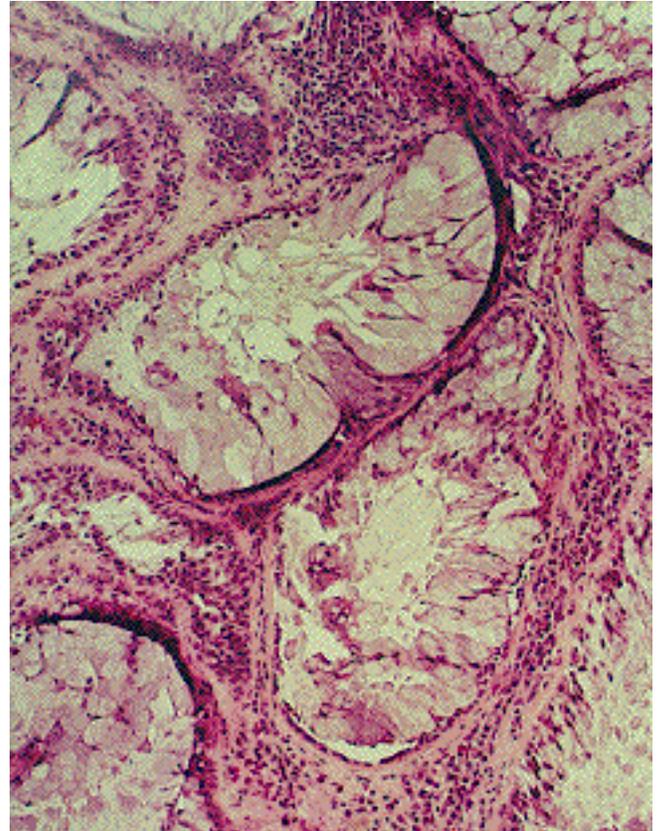


Metaplasia, nasal mucosa. Thick squamous mucosa is seen instead of the normal thin ciliated respiratory mucosa. Patient had chronic sinusitis for years. Note the prominent basement membrane (triangles).

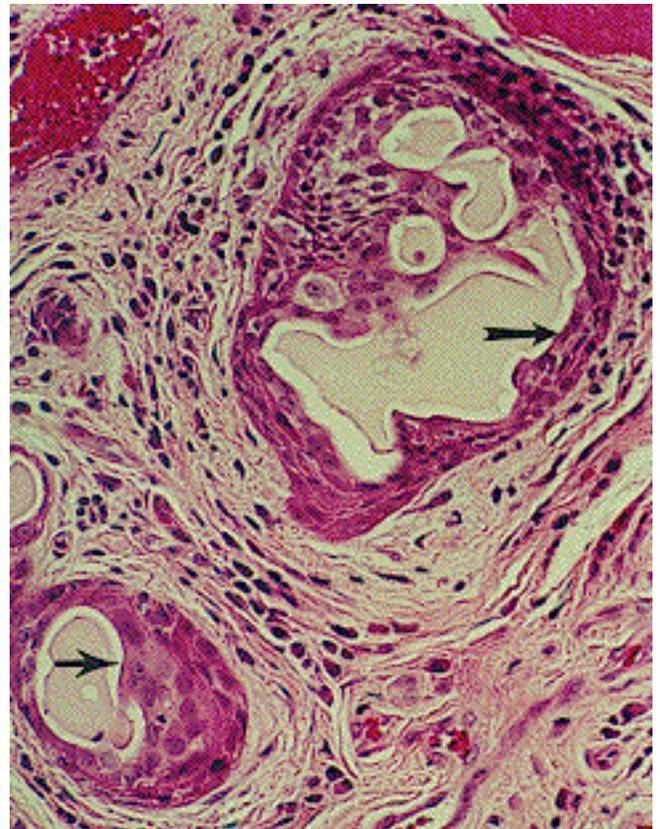


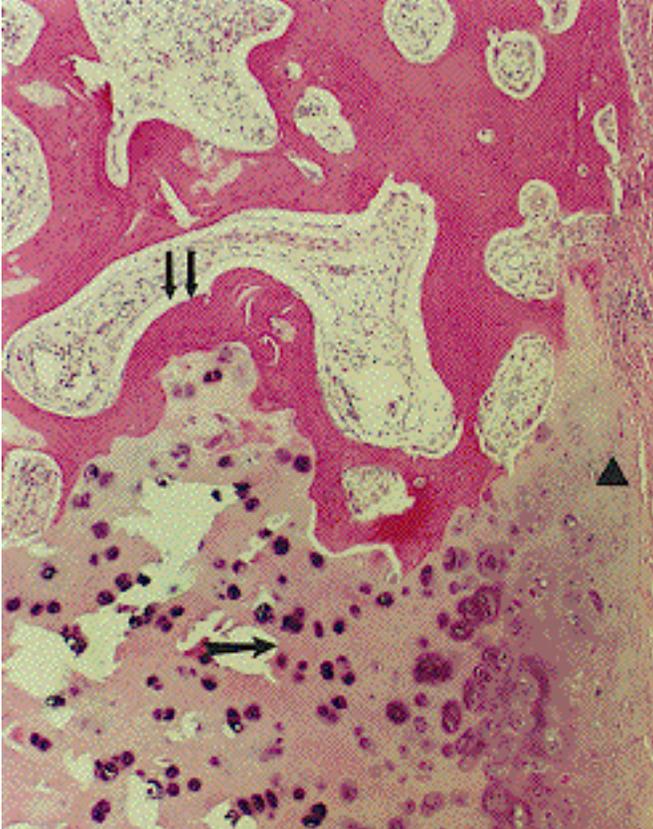
Metaplasia, pleomorphic adenoma, parotid, showing chondroid element (triangles) with osseous metaplasia (arrow).

Metaplasia, nasal polyp, with extreme mucinous change.

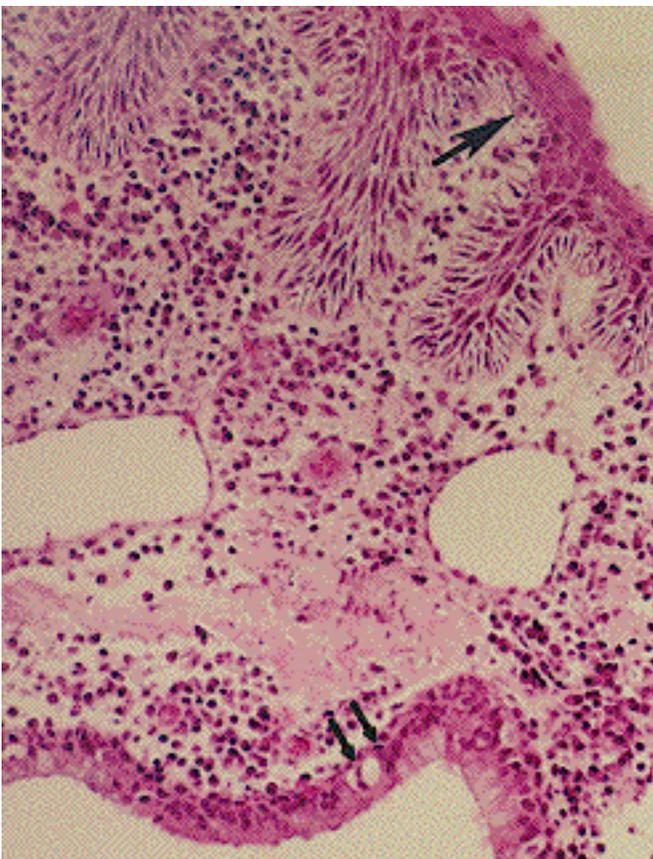


Metaplasia, minor salivary glands of oral cavity in which the original glandular epithelium has changed to a squamous type (arrows).





Metaplasia, larynx, with osseous metaplasia (double arrows) seen in preexisting cartilage (arrow). Triangle indicates perichondrium. There also was invasion of the cartilaginous tissue by squamous cell carcinoma (not seen here).



Metaplasia, aural polyp. Squamous epithelium has replaced respiratory type mucosa on the exposed outer surface of the polyp (single arrow) while the original mucosa remains on the opposite side (double arrows) which was still protected, being within the middle ear.

Metaplasia, larynx, in which glandular epithelium has changed to oncocytic-type epithelium, oncocytes being benign epithelial cells with a granular appearing cytoplasm due to their being swollen with mitochondria. Oncocytes increase with age and are often found in small groups in otherwise normal organs.



CLINICAL ASPECTS

Perhaps the commonest site of metaplasia seen in the head and neck area is along the nasal septum, far anteriorly, where nose picking and the drying effects of air currents change respiratory epithelium to squamous. The color change from pink to white is very obvious to the clinician.

Sometimes a calculus in the duct of a salivary gland results in replacement of normal secretory columnar epithelium by stratified squamous epithelium.

Vitamin A deficiency can produce squamous metaplasia in respiratory epithelium. While metaplastic change to squamous epithelium favors greater protection, mucus production is lost. Also undesirable is the possibility of inducing cancer in metaplastic squamous epithelium should noxious stimuli continue.

In the Barrett esophagus squamous epithelium is changed by metaplasia into columnar epithelium due to gastroesophageal reflux. The metaplastic epithelium may be in patches or come to cover the entire lower esophagus. Gastric cardiac-like epithelium, fundal type epithelium, or intestinal type epithelium may appear. The risk of adenocarcinoma is greatly increased when Barrett's epithelium is present, and virtually all adenocarcinomas of the esophagus (30-50 percent of all esophageal carcinoma) occur in Barrett's epithelium with a few others apparently arising in esophageal mu-

cous glands or representing an extension of gastric carcinoma. Squamous carcinoma of the esophagus is the most common type of esophageal cancer and is considered, at least in the United States, to be related to cigarette smoking and alcohol use. There are obviously other causes inasmuch as the disease is extremely prevalent in certain areas of other countries (Iran, China) where these risk factors are minimal.