

Difference Between Metaplasia and Dysplasia

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Key Difference – Metaplasia vs Dysplasia

A malignancy is a result of a sequence of pathological events happening over a long period of time. Metaplasia and dysplasia are two different stages of that disease progression that ultimately end up as cancer. Metaplasia is defined as the replacement of one type of cells with another type whereas dysplasia is the disordered growth of the cells. As their definitions state, **the change taking place in metaplasia is the replacement of one type of cells with another type whereas the change taking place in dysplasia is the morphological alterations in the cells that were originally there at the site of injury.** This is the key difference metaplasia and dysplasia.

What is Metaplasia?

Metaplasia is defined as the replacement of one type of cells with another type. This is usually associated with tissue damage, repair, and regeneration.

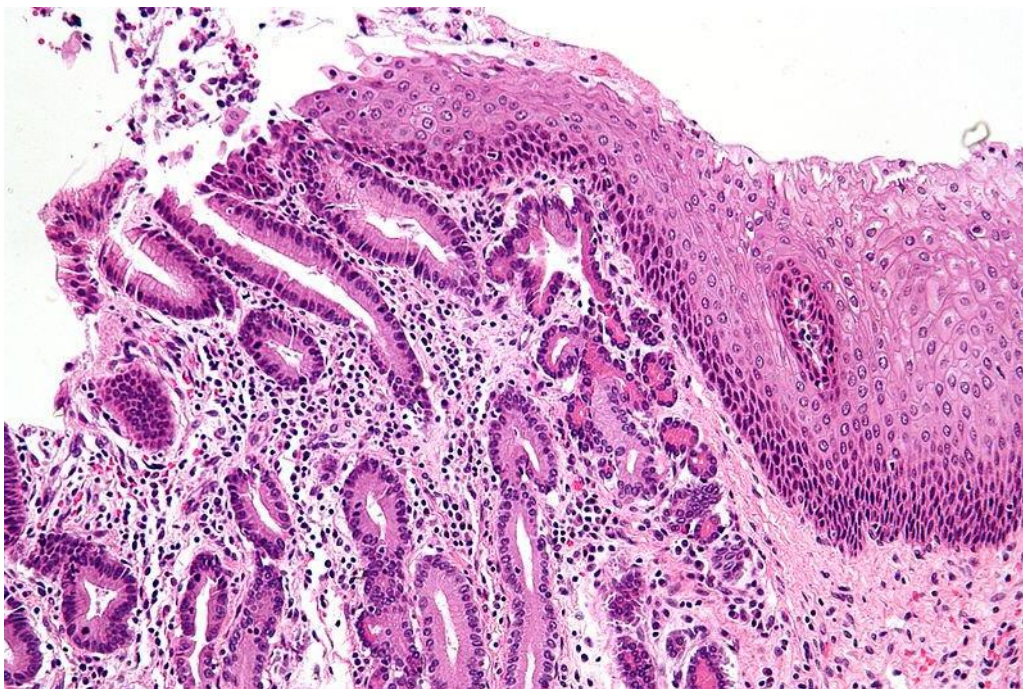


Figure 01: Pancreatic Acinar Metaplasia

The cells that replace the original cells at the site are usually better adapted to the alterations in the local environment. For example, when the [squamous epithelium](#) of the [esophagus](#) is damaged by gastroesophageal reflux, the damaged cells are replaced by the glandular epithelium, which is more adapted due to survive high acidity.

What is Dysplasia?

In simple terms, dysplasia is the disordered growth of the cells. This pathological change is characterized by the loss of uniformity of the individual cells and changes in the architectural orientation of the tissues. The following morphological changes can be observed in the dysplastic cells,

- Pleomorphism
- Enlarged hyperchromatic nuclei
- High nuclear to cytoplasmic ratio
- Abundance of mitotic figures

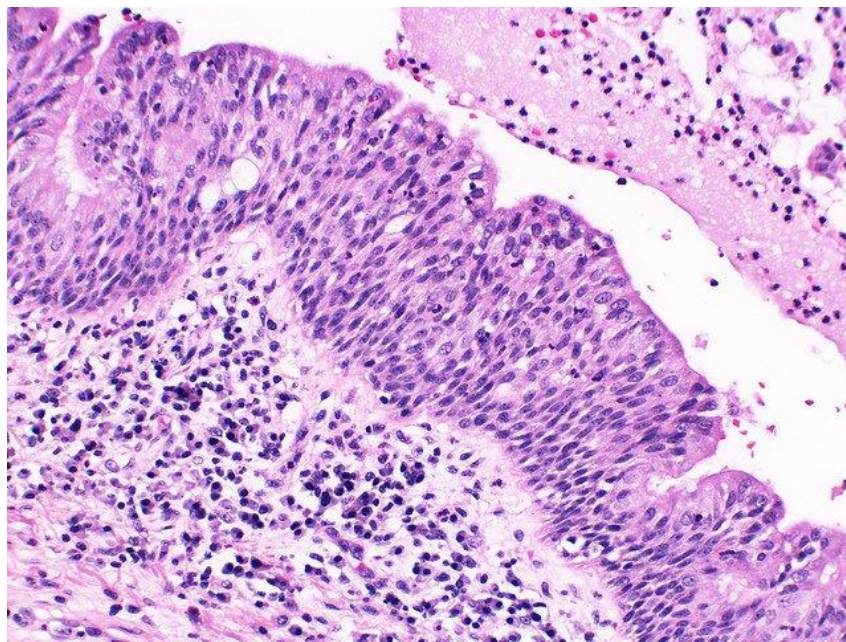


Figure 02: Dysplasia of Bronchial Epithelium

If there are marked dysplastic changes involving the entire thickness of the epithelium and if these changes do not extend beyond the basement membrane this condition is identified as a [carcinoma](#) in situ. A tumor is considered to be an invasive tumor only if it penetrates the basement membrane. It is important to notice that although dysplasia is a premalignant lesion, it does not progress into a

malignancy all the time. With the removal of the inducing factor, a mild to moderate degree of dysplasia can be reversed. Therefore the early identification of dysplastic changes can greatly minimize the risk of malignant lesions.

What are the Similarities Between Metaplasia and Dysplasia?

- Both are premalignant lesions that can develop into malignancies if untreated.

What is the Difference Between Metaplasia and Dysplasia?

Metaplasia vs Dysplasia	
Metaplasia is defined as the replacement of one type of cells with another type.	The disordered growth of the cells is known as dysplasia.
Change	
The cells that were initially there at the site are replaced by a different variety of specially adapted cells.	In dysplasia, it is the cells at the site that undergo morphological changes.

Summary – Metaplasia vs Dysplasia

Metaplasia and dysplasia are two premalignant lesions that are defined as the replacement of one type of cells with another type and the disordered growth of the cells respectively. The pathological change happening in metaplasia is the replacement of one type cells with another type whereas in dysplasia the pathological change taking place is the morphological alterations in the damaged cells. This is the major difference between metaplasia and dysplasia.

References:

1. Kumar, Vinay, Stanley Leonard Robbins, Ramzi S. Cotran, Abul K. Abbas, and Nelson Fausto. Robbins and Cotran pathologic basis of disease. 9th ed. Philadelphia, Pa: Elsevier Saunders, 2010. Print.

Image Courtesy:

1. "Pancreatic acinar metaplasia – high mag" By Nephron – Own work (CC BY-SA 3.0) via Commons Wikimedia
2. "Dysplasia of bronchial epithelium" by Yale Rosen (CC BY-SA 2.0) via Flickr

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