Benign lesions of the larynx

1) **Benign tumors of the larynx** are relatively uncommon. They occur in the following order of frequency: papilloma, chondroma, neurofibroma, leiomyoma, angiofibroma, myoma, hemangioma, and chemodectoma.

**Papilloma**

Papilloma is the most common benign tumor of the larynx and occurs in patients of all ages. The causative agent is human papillomavirus (subtypes 6&11). Papillomas on type: juvenile & adult. Juvenile type seems to be related to hormonal changes so papillomas usually regress during puberty.

The pathology is as follows:
1. Papillary epithelial tumor usually involving the true cords but may affect any site in the upper aerodigestive tract.
2. Papilloma in juveniles is more often multiple and recurs more frequently than in adults, regress at puberty, Malignant transformation is very rare.
3. Papillomas in adults are usually single, less recurance rate, not regress, but may undergo malignant change specifically with HPV subtype 16.

**Symptoms are as follows:**
1. Aphonia or weak cry is usually the first sign in infants.
2. Dyspnea and stridor are seen.
3. Hoarseness is the most common symptom in adults.

**Treatment includes the following:**
1. Suspension microlaryngoscopy with CO2 laser excision is the most commonly employed treatment modality. Multiple excisions are usually required. The laser is favored because of its hemostatic properties & its precision allows for vaporization of the lesion without harming the underlying vocal fold.
2. Tracheotomy is occasionally necessary but should be avoided due to concern about subglottic spread.
3. Cryosurgery.
4. Interferon.
5. Cidofovir, a new antiviral agent approved for ocular cytomegalovirus infections, has shown promise as a local injection in adjuvant therapy.
6. Irradiation is contraindicated because of its carcinogenic effect.

2) **Retention cyst:** the most common site of laryngeal cysts is the supraglottis like false cords, ventricle & epiglottis where there is abundant mucous glands (although mucous retention cysts are the most common type of cysts affecting the larynx, embryonic cysts are possible). Treated by surgical removal.
3) **Laryngocele**; is an air-filled dilation of the ventricle. There are three types
1. External laryngocele, it is the more common form, the sac protrudes above the thyroid cartilage & the thyrohyoid membrane & presents as a mass in the neck.
2. Internal laryngocele, less common, in which the sac remains within the thyroid cartilage.
3. A combined type may also be present.
   The Aetiology is unknown.
   Symptoms may include the following
1. External laryngocele presents as a swelling in the neck, which increases in size with increased intralaryngeal pressure.
2. Internal laryngocele presents with hoarseness & dyspnea.
3. Laryngoscopy may show a smooth dilation at the false cord level involving the false cord & aryepiglottic fold.
Diagnosis is as follows;
1- Characteristic clinical history.
2- Typical appearance of a bulging laryngeal mass, visualized during indirect laryngoscopy, fiberoptic laryngoscopy, or direct laryngoscopy.
3- CT or MRI will help.
   Treatment includes 1-laryngoscopic decompression for small lesions 2- lateral external approach for larger lesions or 3- laser endoscopy.

4) **Laryngeal polyps**
   Laryngeal polyps are the most common benign lesions of adult larynx.
   Vocal abuse, smoking, laryngopharyngeal reflux, hypothyroidism are recognized causes of polypoid degeneration.
   Surgical removal of vocal cord polyps by microlaryngoscopic techniques is considered standard treatment & should be recommended in most cases.

5) **Vocal nodules (singer's nodules)**
   Vocal nodules may considered as a localized traumatic laryngitis, may be caused by vocal overuse like screaming in children or harsh talking in adults or faulty techniques in singers. The commonest site of vocal cord nodule is the junction of anterior and middle third, usually bilateral and more in women. The most common symptom is hoarseness of voice. Voice therapy is highly effective method of treatment. In rare cases in which voice therapy does not give satisfactory results, surgical removal of nodules may improve the voice. Generally, surgery will not resolve the hoarseness completely and rarely indicated, since voice therapy is usually curative.
   Treatment for adults includes, voice rest, voice therapy, microlaryngoscopic excision or laser vaporization followed by voice therapy.
6) Laryngomalacia
Laryngomalacia is the most common laryngeal abnormality of the newborn and is due to unusual flaccidity of the laryngeal tissues especially the epiglottis. The commonest condition causing inspiratory stridor at or shortly after birth is laryngomalacia. Symptoms are inspiratory stridor and noisy respiration noted soon after birth. Vocal cords are normal in appearance & mobility, histopathology of larynx is normal & there is normal cry. Infants are worse when put on their backs (supine) than when on their stomachs (prone). Hypoactive neuromuscular control has been the most current theory for laryngomalacia. The epiglottis is usually elongated, thin & folded on itself (omega shape).
Treatment of Laryngomalacia is by observation & may need tracheostomy in severe cases.

7) Intubation granuloma
The cause of intubation granuloma is endotracheal intubation (predisposing factors include: size, shape, material, duration, procedure, fixation of the endotracheal tube). The most common site for intubation granuloma is vocal process of the arytenoid, about 50% bilateral, women is more in 4:1.
Treatment is by CO2 laser or excision. Medical treatment with antibiotics, antacids & steroids may be effective in reducing the intubation granuloma. Surgery is avoided in sessile stage, as recurrence is likely.

8) Stenosis of the larynx
A) Acquired stenosis of the larynx Injury to the larynx (blunt trauma, intubation, laryngeal endoscopy & surgical intervention) leading to acquired stenosis can involve the supraglottis, glottis, subglottis or any combination of these structures. GERD is also a major cause of laryngeal stenosis.
Clinical features & evaluation include the following;
1. Careful history taking.
2. Thorough physical examination of the head & neck.
3. Radiological examination includes x-ray films of the chest & lateral neck. CT scan has been found to be of great value in the evaluation of laryngeal trauma.
4. Endoscopy.

Prevention
Use of an appropriate (in size & shape) endotracheal tube, proper humidification, control of infection, as well as duration & repetition of intubation are significant
factors in the prevention of subglottic stenosis.

**Treatment**
There are many procedures for this problem including dilation, steroid injection, endolaryngeal laser microsurgery & laryngotracheoplasty.

**B) Congenital stenosis of the larynx**
Less than Acquired stenosis, 50% of cases need tracheostomy but most of them will be decannulated within 2-5 year without required any surgical intervention. Pathology: either soft type (soft tissue thickening like mucosa or submucosa) or hard type (cartilage thickening mostly cricoid cartilage) Clinical features & evaluation & Treatment: same as Acquired stenosis but most of infant & young children not required any surgical intervention & will improve with larynx growth.