Facial Emphysema
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Tissue Emphysema:

Is defined as the passage and collection of gas in tissue spaces or fascial planes.

It occurs due to various dental procedures such as: amalgam restorations, periodontal treatment, endodontic treatment, and surgical exodontia.

The common etiologic factor is compressed air being forced into different tissue spaces. For example, canal preparation during Endodontic treatment a blast of air from the triplex syringe to dry the canal, and also during apical surgery - air from a high-speed drill can lead to air emphysema.

Any time a stream of air is directed toward exposed soft tissues, the potential for a problem exists

Diagnosis:

In order to come to the correct diagnosis, a detailed history is imperative, as well as meticulous palpation of the involved tissue.

The usual sequence of events is rapid swelling, erythema and crepitus.

Crepitus is what easily differentiates air emphysema from angioedema.

Pain is not usually a major complaint however dysphagia and dyspnea have been reported.

Tissue space emphysema remains in the subcutaneous connective tissue and usually does not spread to the deep anatomic spaces, unlike irrigant extrusion reactions; such as hypochlorite extrusion.

However, migration of air into the neck region could cause respiratory difficulty, furthermore, progression into the mediastinum could potentially cause death.

Treatment:

Although it may look alarming to the patient and the clinician, this is usually a benign condition that resolves over 3-10 days.
The gas that has been forced into the fascial tissues is resorbed into the blood stream for eventual excretion via the lungs.

One serious complication can be pneumonia mediastinum; which is basically the presence of air or other gas in the chest cavity and patients usually present with severe chest pain. Other symptoms may include labored breathing, voice distortion (as with helium), and subcutaneous emphysema, specifically affecting the neck and chest along with facial swelling from the original site of trauma. It is recognized on auscultation by a "crunching" sound timed with the cardiac cycle.

Another complication can be that of airway compromise.

There has yet to be any case reports of serious infections due to tissue emphysema however, most reports have placed the patient on a course of Antibiotics designed to cover normal oral flora. The rationale, for antibiotics, being that the breach in the mucosa is almost certainly accompanied by ingress of oral flora which has the potential to infect the subcutaneous tissues.

In some instances, steroids may be prescribed (PO), to decrease the swelling.

Prevention:

Preventive measures that should be taken to avoid the risk of this occurring.

In endodontics this means using paper points to dry the root canals instead of an air syringe. If an air syringe must be used, horizontal positioning over the access is suggested.

In surgical procedures, once a flap is reflected, or when bone is being removed, use of slow speed or high-speed hand pieces that do not direct jets of air into surgery sites are highly recommended.

Summary:

Subcutaneous emphysema is not a common occurrence during dental procedures. Due to the promptness of swelling directly related to certain events (such as: blowing air directly into the canals during root canal treatment, surgical extractions with an improper hand piece, restorative therapy, crown preparations and the use of air abrasion) the appearance of the swelling can be alarming for both the patient and the clinician. It is important to differentiate subcutaneous emphysema between other similar conditions such as hematoma formation, allergic reactions, angioedema or facial swelling due to dental infection. Treatment usually consists of a course of antibiotics and a wait and see approach for the swelling to decrease.