Post natal growth of maxilla:
Mechanisms and areas of growth:
1- Cartilaginous growth:
The growth of cartilage by division of chondroblast cells with progressive conversion to bone:
A/ At the base of the skull (sphenoid – occipital synchondroses) would increase the antero-posterior dimension of the skull base.
B/ In the area of nasal septum would bring the nose forward from original position under The front of the cranium.
C/ in the condyle of mandible which increase the length and height of mandible
- The age in which this growth is disappear is about 10 years of life

2- Sutural growth:
The bony sutures of the head capable of increasing the size of head in all dimension. These sutures are aligned so that growth at these sutures would move the face in a forward and downward direction in relation to the cranium.
sutural growth is active in bringing the bones into close proximity. Sutural growth must be active at the same time of main enlargement of the cranium that is up to 6 or 7 years of age, an example on sutural growth is symphysis area (end at 3 years of life) and inter – maxillary suture.
3-Periosteal and endosteal growth:
The apposition of bone on the periosteal surfaces enlarge the head in all dimension, but this will increase the thickness of bone therefore concomitant resorption of bone is necessary in order to (obtain the appropriate thickness and strength):
1/ Periosteal: is Extensive remodeling of bones, which involve resorption of bone from the outer surface and apposition of bone on the inner surface.
2/ Endosteal resorption and addition of bone from within the cancellous spaces is also necessary to maintain the appropriate, thickness of the cortical layer of bone, this method of growth is the most active type of growth in the skull and jaws after the first few years of life, when cartilaginous and sutural growth slows, and it continue through the life.
4- Functional matrix growth:
Each part of the skull will grow by the stimulation of tissue matrix:
1- the vault of the cranium will grow by the stimulation of growing brain.
2- the orbital cavity will grow by stimulation of growing orbit.
3- the growth of the mandible can also be stimulated by the growth of the tongue.
4- alveolar bone growth can be stimulated by development and eruption of teeth.

The Maxilla:
The maxilla develops postnatally entirely by intra-membranous ossification. Since there is no cartilage replacement, growth occurs into two ways:
1- Sutural growth:
A/ Trasversal growth:
by appostion of bone at the sagittal sutural such as inter nasal suture, their activity decrease at the end of the first year but they continue forming osteal tissue for a long period also apposition of bone at the external aspect of the maxilla on both sides at the premolar regions by surface remodeling, Additive growth on the free ends increase the distance between them, The buccal segment move downward and outward, as the maxilla itself is moving downward and forward, owing the principle of expanding." V ".
B/ Vertical and antero-posterior growth:
Apposition of bone: at the sutures that connect the maxilla to the cranium and cranial base such as:
( Temporo-Zygomatic ), ( Maxillo-Zygomatic suture ), ( Pterygo-Palatine suture ) (Fronto-Maxillary suture).
These are parallel to each other and they orient the direction of the facial growth downward and forward.

2- Surface remodelling:
A- Vertical growth: include:
1- Alveolar process: the formation of alveolar process by apposition of bone on three aspects (inferior, internal, external) in posterior region and on two aspect (internal, inferior) in the anterior region.
2-Palate: there will be resorption on the superior aspect (nasal) and apposition on the inferior aspect (oral) which will bring the palate downward.
B- Antero-posterior growth: Occurs by:
1- anterior alveolar growth, resorption in the vestibular part and apposition on the inferior and palatal part.
2- an apposition on the posterior aspect of the horizontal part of the palate.
3- development of the tuberosity.
Maxillary Sinus:
As the sinus has the volume of small peas, the eruption of deciduous teeth will modify its volume and it increase in size with the eruption of upper six, about 8 years it has a pyramidal form that will lengthen after the eruption of the canine and the last molar.

References:
2- Contemporary orthodontics, third edition, William R. Proffit, DDS, PHD, with Henry W.Fields, JR, DDS, MS, MSD.