Fig. 8.131 Masseter muscle.
Masseter

- Origin: three layers
  - Superficial: Maxillary process of zygomatic bone & anterior 2/3 of inferior border of zygomatic arch
  - Middle: medial aspect of zygomatic arch
  - Deep: deep surface of zygomatic arch
- Insertion: lateral surface of mandibular ramus
- Nerve supply: Nerve to masseter from anterior division of mandibular nerve.
- Action: Elevation & some side to side movement.
- Sub-masseteric space infection.
Temporalis

- Origin: Whole of temporal fossa up to inferior temporal line & temporal fascia.
- Insertion: Medial surface, apex, anterior and posterior borders of coronoid process & to anterior border of mandibular ramus.
- Nerve supply: Deep temporal branches of mandibular nerve.
- Action: Elevation (closure of mouth and approximation of teeth; side to side (grinding) movement; retraction.
Lateral pterygoid

Short thick muscle lying almost horizontally.

- **Origin**: two heads: upper head from infratemporal surface and crest (of greater wing of sphenoid); lower head from lateral surface lateral pterygoid plate.
- **Insertion**: Pterygoid fovea on neck of mandible and to capsule and articular disc of TM joint.
- **Nerve supply**: Nerves to lateral pterygoid from anterior division of mandibular nerve.
Relations:

Superficial: Ramus of mandible

   Masseter,
   Superficial head of medial pterygoid
   Tendon of temporalis

Deep: Deep head of medial pterygoid

   Sphenomandibular ligament
   Maxillary artery
   Middle meningeal artery
   Mandibular nerve

Upper border: Deep temporal & masseteric nerves

Lower border: Lingual and inferior alveolar nerves
Between two heads of pterygoids:

- Buccal nerve
- Maxillary artery
- Pterygoid venous plexus

Actions:

- Little protrusion to assist in opening of jaw, depression along with hyoid muscles
- Grinding (collective action of both pterygoids)
Medial pterygoid

- **Origin:** Deep head: Medial surface of lateral pterygoid plate
  
  Superficial head: Maxillary tuberosity
  
  Pyramidial process of palatine bone

- **Insertion:** By a strong a tendinous lamina to postero inferior part of medial surface of the ramus and angle of mandible

- **Nerve supply:** Nerve to medial pterygoid (branch from mandibular nerve)
• Relations:
  Superficial:  Ramus of mandible  
           Lateral pterygoid  
           Sphenomandibular ligament  
           Maxillary artery  
           Inferior alveolar Vs and N  
           Lingual nerve  
  Deep:  Tensor veli palatini  
         Superior constrictor of pharynx  
         Styloglossus and stylopharyngeus

• Actions:  Elevation, protrusion, grinding
Maxillary artery
Terminal branch of external carotid artery

• Course: Origin behind neck of mandible
  Embedded in parotid gland
  Crosses infratemporal fossa to enter pterygopalatine fossa
  Divided into three parts

• Branches: **First part** (mandibular)
  Deep auricular, anterior tympanic, middle meningeal, accessory meningeal, inferior alveolar (all enter bone)

**Second part** (pterygoid)
Mucosal – deep temporal, pterygoid, masseteric and buccal)
Temporomandibular joint
Synovial, complex, bicondylar

• Above: Temporal articular surface & anterior part of mandibular fossa.

• Below: Mandibular condyle

Articular surfaces are covered with fibrocartilage.

• Articular disc: Oval plate of fibrous tissue, like a peaked cap.
  Completely divides the cavity
  upper surface - concavo-convex
  lower surface - concave
  blends with the fibrous capsule
  anteromedially to the tendon of lateral pterygoid
  medially and laterally short strong bands pass to condylar poles
• Fibrous capsule: Encloses the joint and is attached to
  above along the anterior margin of articular
tubercle, posterior to squamo-tympanic fissure,
laterally and medially along the margins of
articular fossa
  Below around the upper part of the neck of
mandible
  Loose above the disc but taut below it

• Synovial membrane: Lines the capsule (does not
cover disc)
Lines non articular surfaces of both superior and
inferior synovial compartments
Reflected along the mandible’s neck and lateral
pterygoid
Extra capsular ligaments

• Lateral ligament: Close to the joint runs diagonally backward from the margins of articular tubercle to the neck of the mandible. Fibers slope downwards and backwards deep to parotid. Prevents posterior dislocation

• Sphenomandibular ligament: Medial to TM joint runs from the spine of the sphenoid bone to the lingula on the medial side of ramus of mandible.

• Stylomandibular ligament: Passes from the styloid process to the posterior margin and angle of mandible.
Protrusion
- lateral pterygoid assisted by medial pterygoid

Retraction
- posterior fibers of temporalis, deep part of masseter, and geniohyoid and digastric

Elevation
- temporalis, masseter, medial pterygoid

Depression
- gravity
- digastric, geniohyoid, and mylohyoid muscles
• Blood Supply: Superficial temporal artery
  Maxillary artery
• Nerve supply: Auriculotemporal nerve
  Nerve to masseter
• Movements: Depression / Elevation (lower part)
  Protraction / Retraction (upper part)
  Rotation (gliding, spin, roll)

  Position of rest
  Occlusal position
• Depression: generated by digastric, geniohyoid & mylohyoid of both sides
  assisted by gravity and lateral pterygoid
• Elevation: Powerful movement generated by temporalis, masseter & medial pterygoid.
• Protraction: Forward translocation of head of mandible on to the articular tubercle; mainly achieved by lateral & medial pterygoids.
• Retraction: Backward translocation of head of mandible in to the mandibular fossa; mainly achieved by posterior and deep fibres of temporalis and masseter.
• **Opening of mouth**: Rotation of mandibular condyles on common horizontal axis
  Forwards and downwards gliding
  Contraction of lateral pterygoid
  At full opening condyles articulate with most anterior part of disc and posterior attachment of disc to the temporal bone is fully stretched

Opening involves both depression and protrusion, protrusion allows greater depression by preventing backward movements.

• **Closure of mouth**: Reverse movements
  Head glides backwards and hinges on its disc
  Relaxation of lateral pterygoid – allows disc to glide back up to mandibular fossa.
Clinical Anatomy

- Dislocation: excessive contraction of lateral pterygoid during yawning or a blow to the chin when the mouth is open. (reduction)
- Fracture
- Arthritis: degenerative changes, may result in dental occlusion and joint clicking (crepitus-delayed anterior disc movement)