Carotid space abnormalities

Tumour cause displacement of strucgtures of

ICA	ECA	IJV	Tumour
Splayed posteriorly	Splayed away from ICA	Not relevant	Carotid body tumour
Anteriorly and medially		*Posteriorly and laterally*	Vagus Schwanoma (but at infrahyoid location- the IJV is not displaced too much posteriorly but mainly laterally- hence becomes difficult to differentiate from sympathetic nerve system Schwanoma (see below). But in general Vagus nerve Schwanoma will not show much enhancement. D/D of Vagus nerve Schwanoma will be cervical nerve root Schwanoma- they will also displace both carotid arteries anteriorly and IJV laterally.
Anteriorly	Anteriorly	*Anteriorly*	Sympathetic nerve system Schwanomas
Encased	Encased	Encased	Parapharyngeal mucosal squamous cell carcinoma and rarely (Shamblin type C) Paragangliomas
Posteriorly	Posteriorly	Posteriorly	Ansa Cervicalis Schwanoma (tend to be infra hyoid)

Summery :

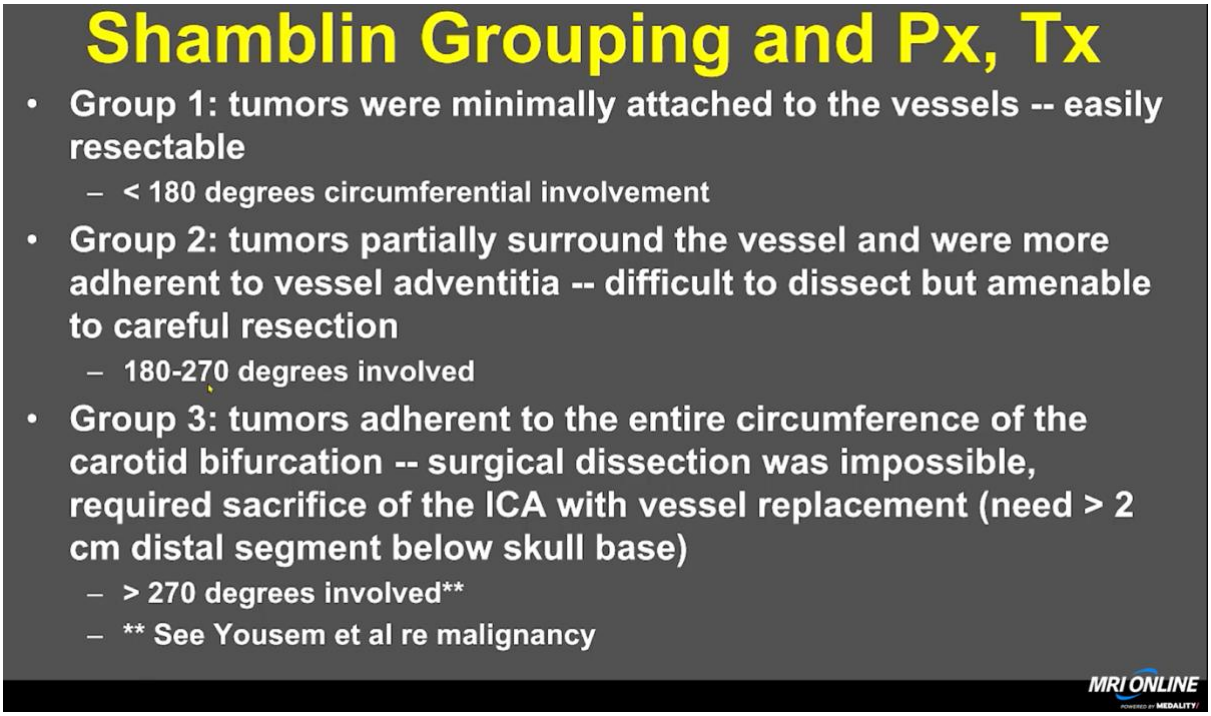
1. **All three displaced anteriorly- SNS Schwanoma**
2. **All three displaced posteriorly- Ansa Cervicalis Schwanoma**
3. **Arteries displaced anteriorly while Jugular vein displaced posteriorly and laterally- Vagus nerve Schwanoma (and cervical nerve root Schwanoma).**
4. **Arteries splayed with postirony displacement of ICA- CBT.**

Neurogenic tumour are -:

- **Schwanoma – two types – Antonie A and Antonie B. Have low vascularity.**
- **Neurofibroma- Tend to have areas with target signs- dark centre and bright periphery (in MRI)**

Extracranial Meningiomas-: 2% of all Meningiomas . Most common location are Sinonasal > middle ear > Temporal bone > PPA > infratemporal. Generally associated with NF2

Shamblin Grouping/ classification for grading carotid body tumours -:



Vascular salvageability -:

270-degree rule-

In general malignant tumours which encase a vessel by more than 270 degree, ----- are most likely infiltrating that vessel and it will be unlikely to salvage such a vessel during surgery. In case of Carotid artery this usually means in operability of tumour. In such case, the surgeon has two option-:

Option 1-: Choose radiotherapy or chemotherapy.

Option 2-: Preoperative balloon occlusion challenge- occlude the involved carotid artery preoperatively for some time and see how patient responds. If there is enough collateral flow, then surgeon can proceed to surgery.

Shamblin grouping

Tumour which have>= 270 degree encasement of Carotid artery and still the artery may be salvageable is true with – Chordoma / adenocarcin9ka and meningioma but never with SqCCa.

Beware of glottic and supraglottic carcinoma which sometime spread from posterior aspect with very little laryngeal component and then can invade Carotid sheath and neck structures.

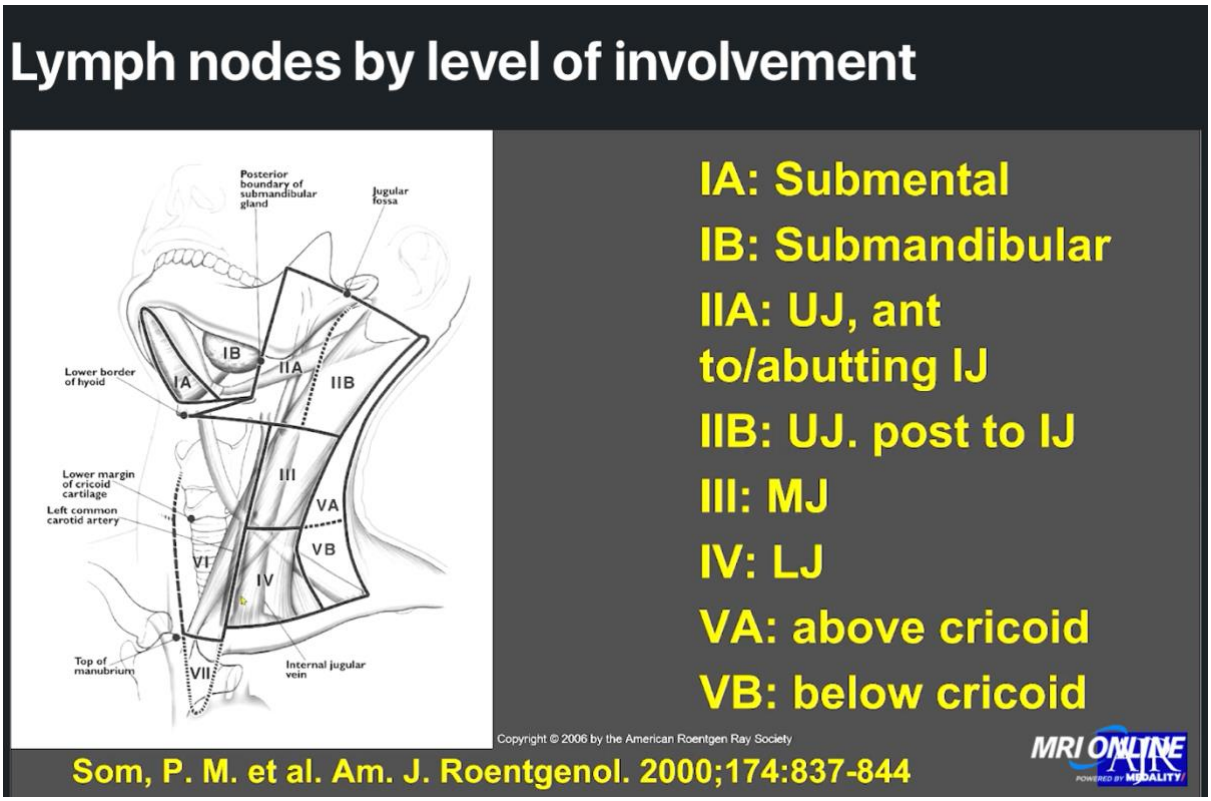
Nodal staging :

Central v/s lateral and Vertical demarcations (Above Hyoid, v/s below Hyoid) See diagram below -:

1. **Central -:**
    a. **IA and IB -:**
        i. **IA- submental- mylohyoid**
        ii. **IB- Submental – digastric respectively)**

b. VI-: Below Hyoid but above Manubrium – paratracheal.
c. VII- below Manubrium- paratracheal.

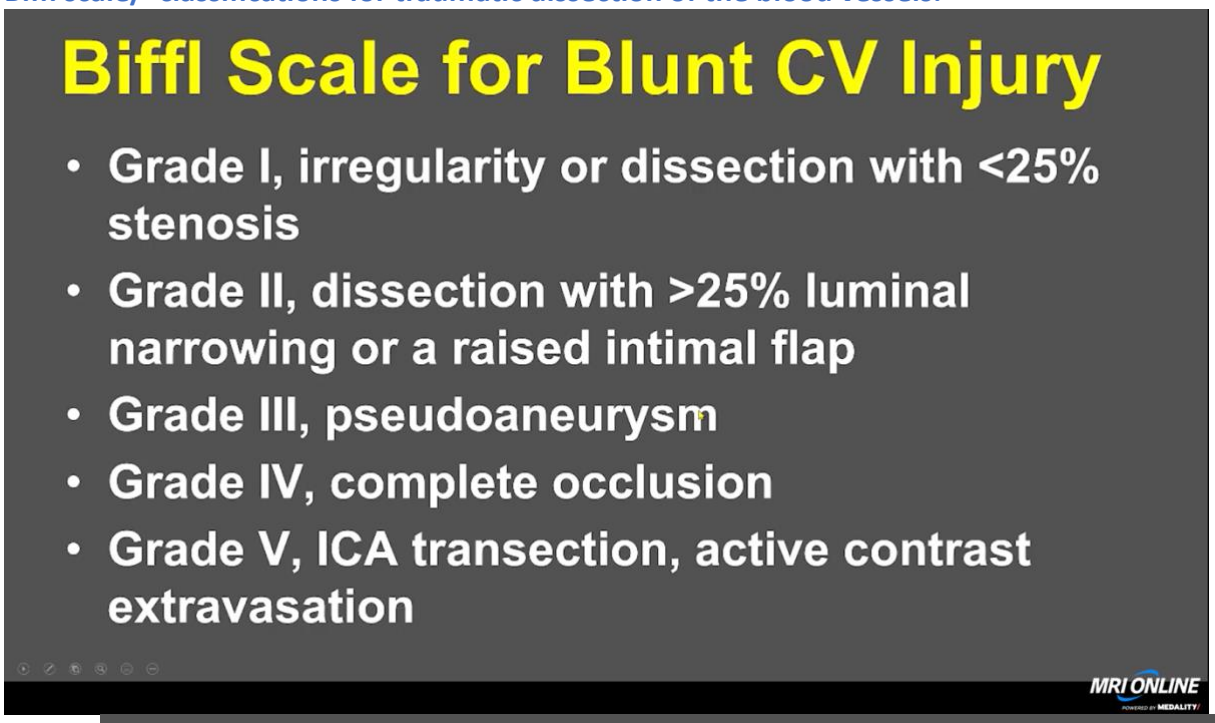
2. Lateral nodes-:
   a. II-Above Hyoid-
      i. IIA- Entirely anterior to IJV
      ii. IIB-; entirely behind the IJV
   b. III-: below Hyoid but above Cricoid
   c. IV- Between Cricoid and Clavicle
   d. V-: Entirely behind the sternocleidomastoid -:
      i. VA-: Above cricoid
      ii. VB- Below Cricoid.

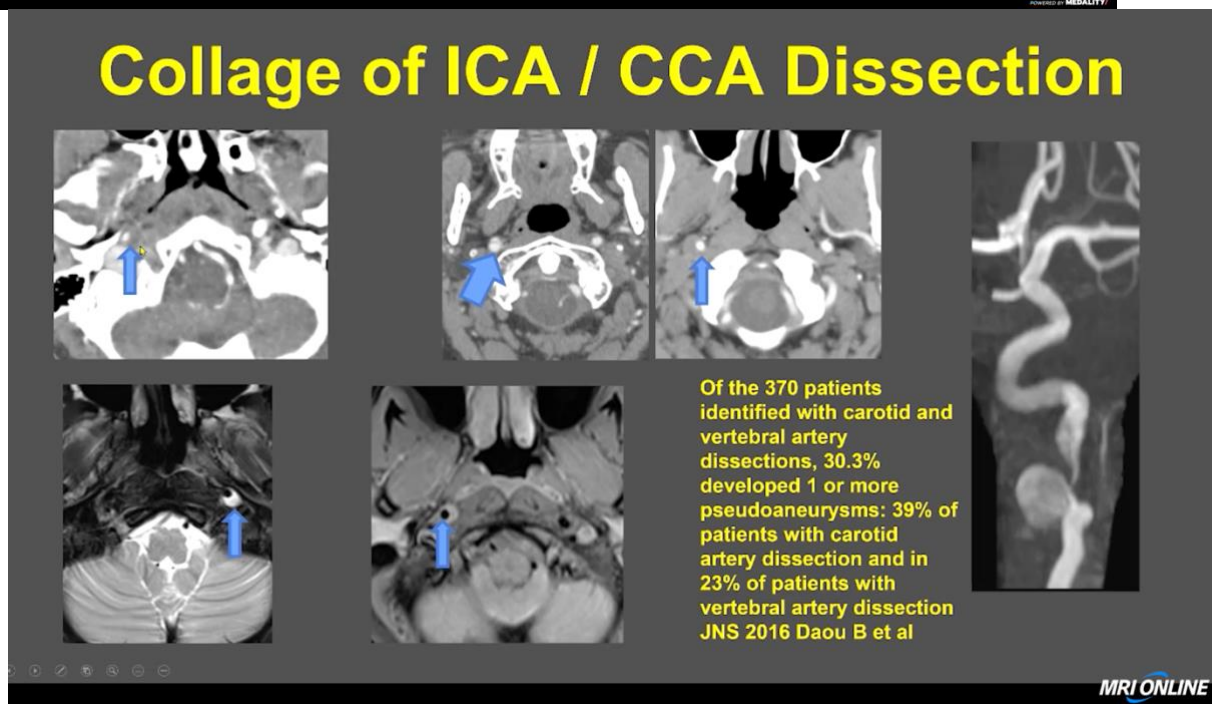


Rare and unusual diagnosis in carotid space;
(VITAMIN C &D)

- Normal variant- medial deviation of the carotid artery due to weakness of the fascia.
- Mafan's syndrome
- Loeys Deitz syndrome : Aortic aneurysm (same as Marfans) + hypertelorism + bifid uvula and palate
- Infection: Lemeirs disease (thrombophlebitis of Jugular vein)
- Inflammation of floor of mouth >> extending to submandibular space >> and then to carotid space : Ludwig Angina (may lead to compromise of airway).

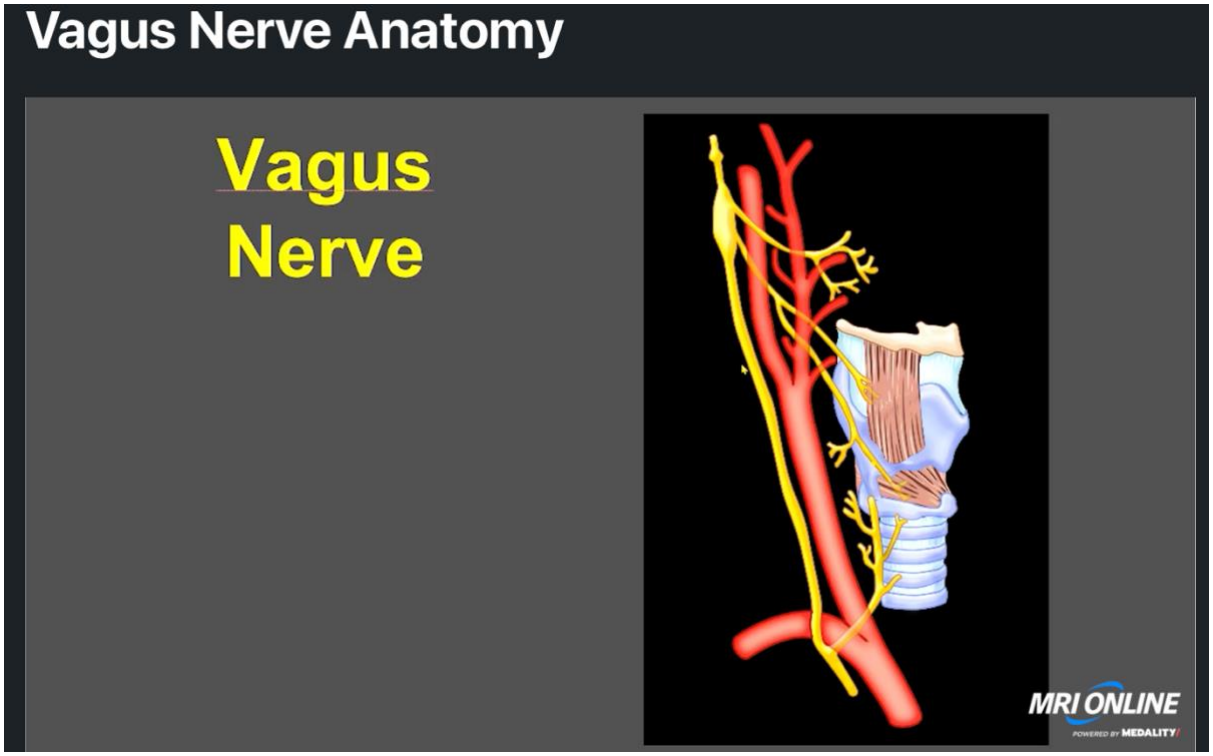
- Dissection of carotid artery -: Bifils classification of severity of traumatic injury of blood vessels.
- Biffl scale/ classifications for traumatic dissection of the blood vessels:



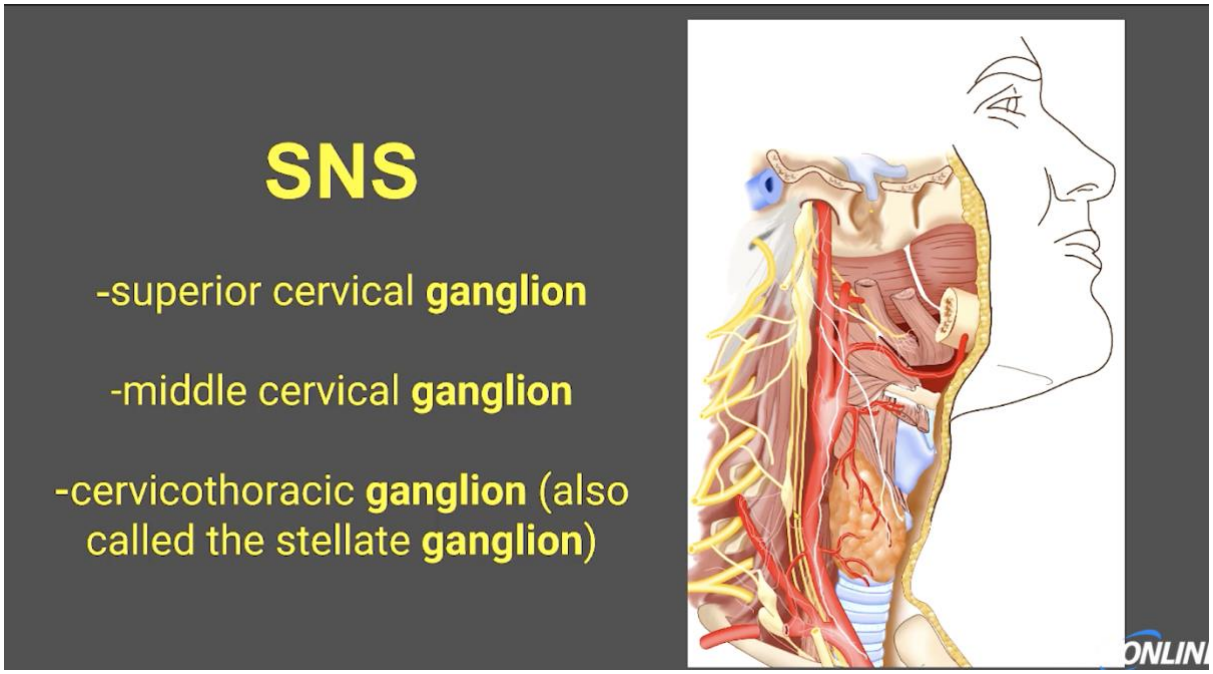


- Carotid webs- are normal variant- but recently it has been shown that they do increase risk of recurrent stroke in the patient with web and first episode of stroke.
- Dissection – can be asymptomatic- the risk of stroke falls to baseline after 1st 2 weeks. So dissection with no symptoms are treated conservatively with antiplatelet drugs for 2 weeks and then the drugs are weaned off. MC dissection in neck is that of vertebral arteries.
- Carotiddynia- thickening of wall and narrowing of vessel with inflammatory tissue around the Carotid artery- resolved in 2 weeks after NSAID treatment.

- **Benign tumours of carotid space : Most tumour of carotid space are benign-: PGN (Glomus Jugulari , glomus vagal, CBT , Glomus Tympanicum0 that GJ growing into middle ear) / Schwanoma / meningioma/ malignancy – 270 degree rule.**



VAGUS NERVE SCHWANAOM- WILL BE DISPLACING THE IJV POSTERIOR LATERALLY AND CAROTID ARTERIES ANTERIORLY.
BUT, THE SYMPATHETIC NERVE TUMOUR WILL DISPLACE BOTH CAROTID ARTERIES AND IJV ANTERIORLY.



LAYERS OF FASCIA FOMRING CAROTID SHEATH