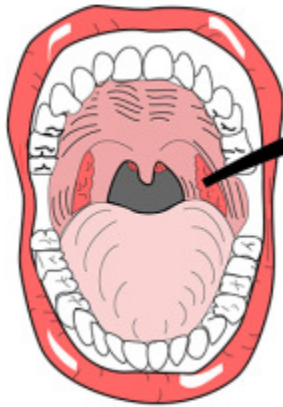


Referred Pain from Heart & Abdomen

TYPES OF REFERRED PAIN

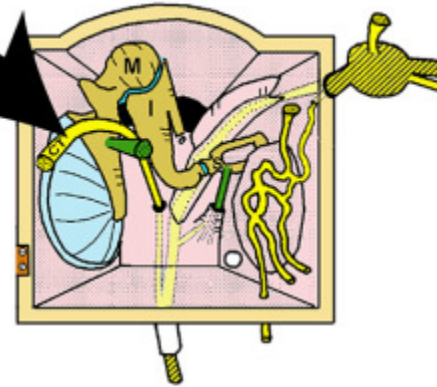
- 1. Somatic to somatic**
- 2. Pressure/trauma to nerves**
- 3. General visceral afferent
(Associated with autonomics)**

SOMATIC TO SOMATIC REFERRED PAIN



TONSIL

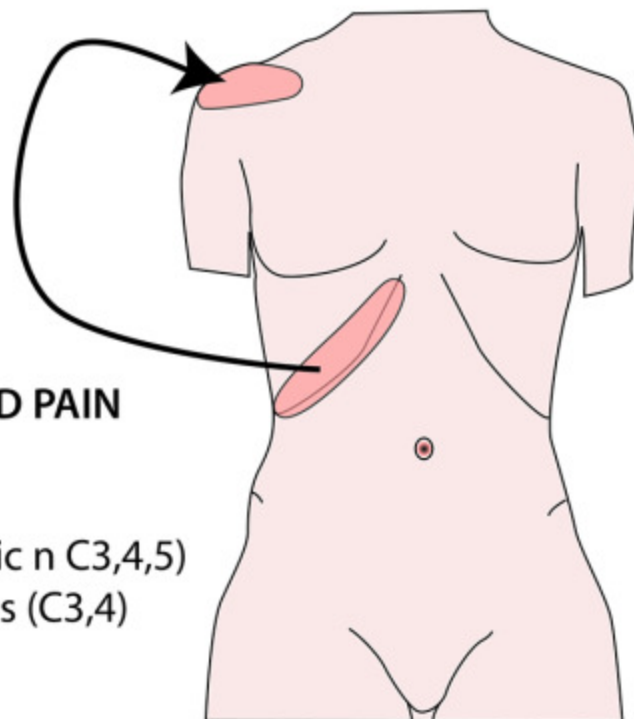
Glossopharyngeal (IX)
in oropharynx



MIDDLE EAR

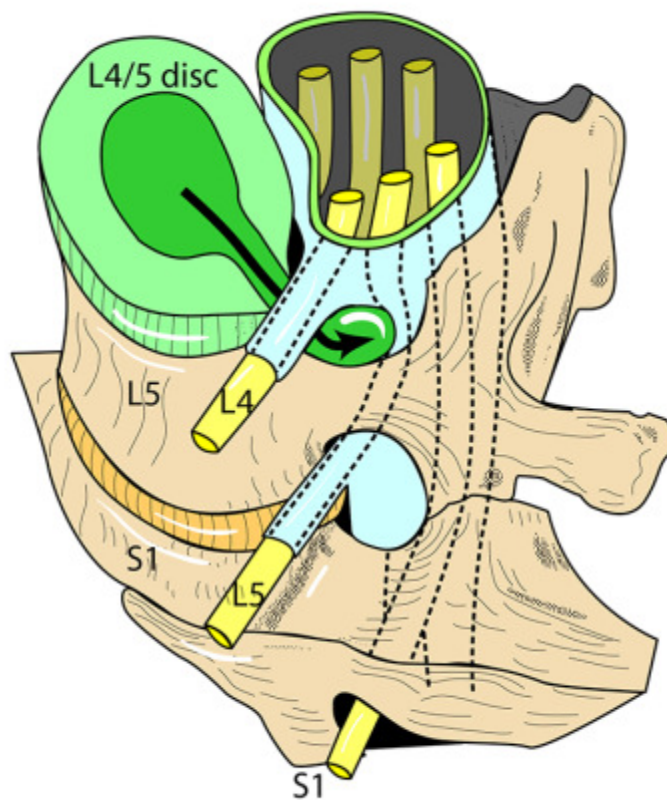
Glossopharyngeal (IX)
tympanic branch

TO



SOMATIC REFERRED PAIN

Subdiaphragmatic
peritoneum (phrenic n C3,4,5)
to supraclavicular ns (C3,4)



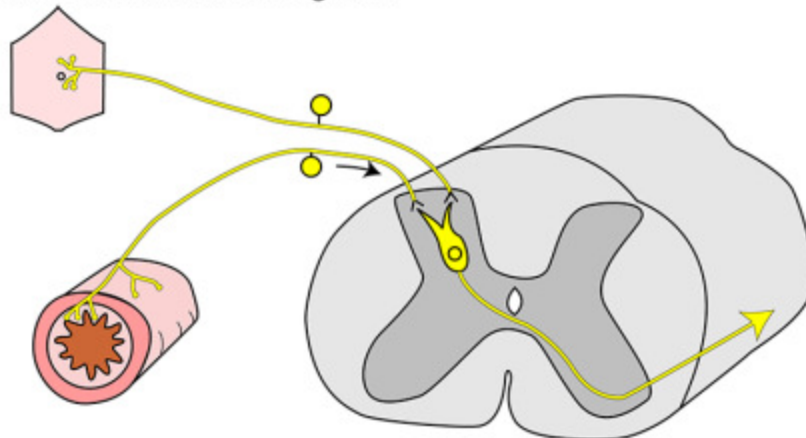
POSTEROLATERAL DISC PROLAPSE

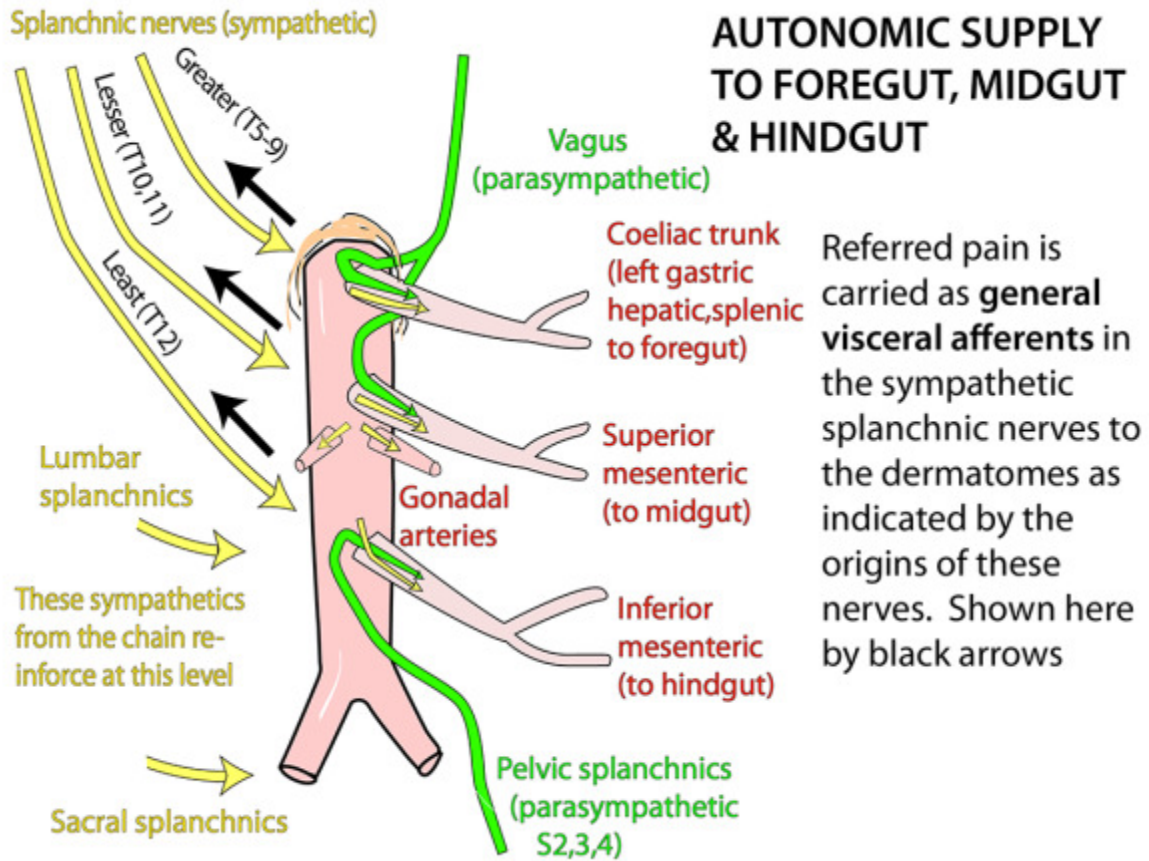
A posterolateral disc in the L4/5 space will predominantly affect the L5 root but may also affect the S1 root and this will lead to a weak or absent ankle jerk

REFERRED PAIN VIA THE AUTONOMIC PATHWAYS

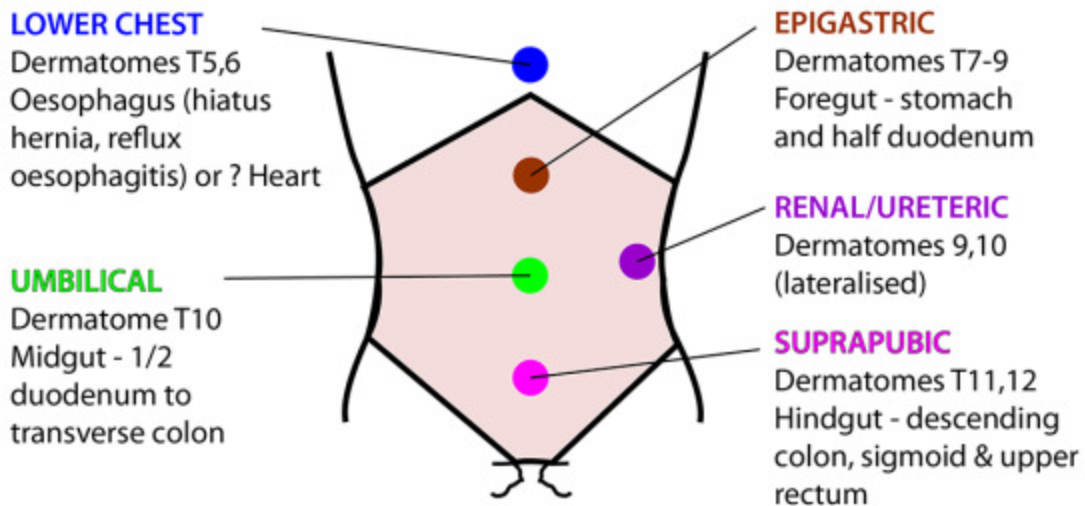
Pain from an internal organ is usually felt in a more superficial region such as a dermatome. Travelling in **General Visceral Afferents** with the sympathetics the pain signals from the inflamed viscera enter the dorsal horn of the spinal cord and converge on the same neurones that are receiving sensory input from distant **SOMATIC** structures. The CNS cannot distinguish between the incoming signals and incorrectly assigns the visceral pain to a somatic area.

Here, for instance, the pain from the inflamed appendix is being referred to the T10 dermatome (umbilical region).





REFERRED ABDOMINAL AND LOWER CHEST PAIN

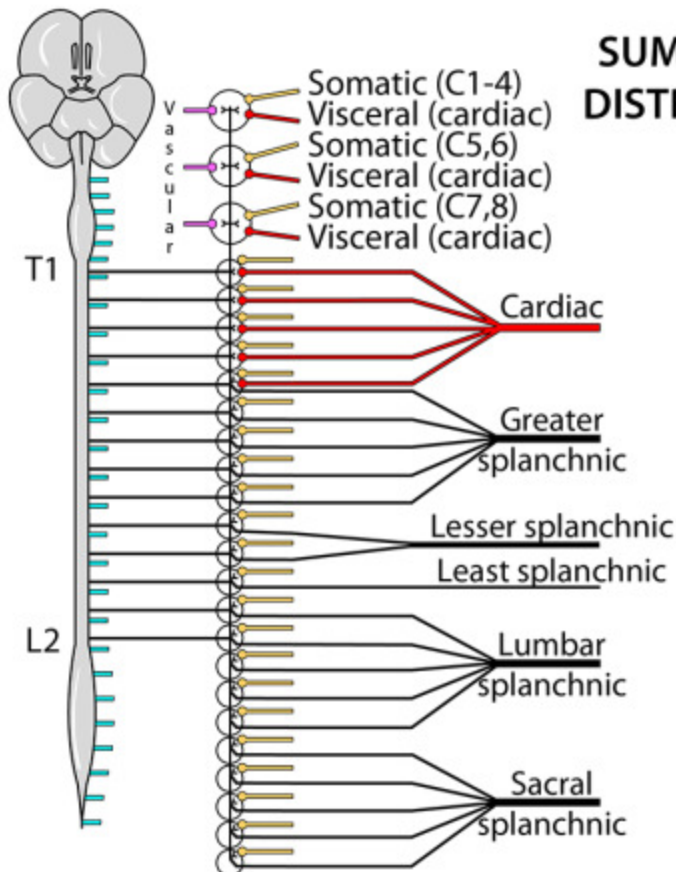
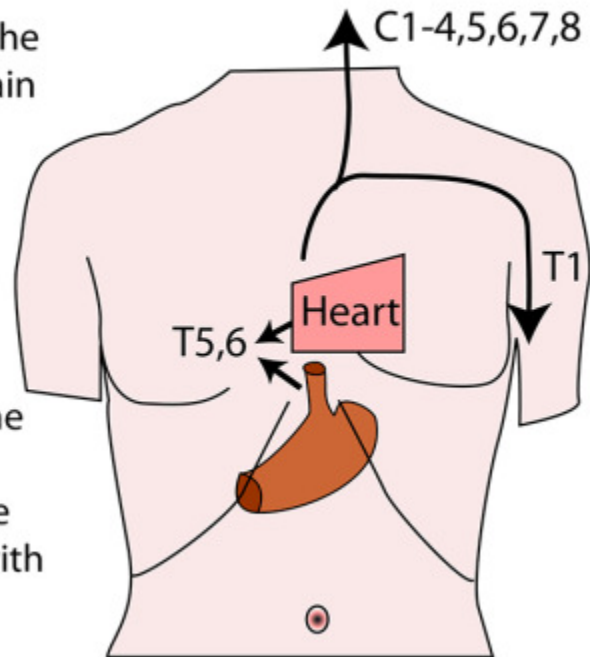


All pain is carried in "**general visceral afferents**" by the splanchnic sympathetics, via the sympathetic chain to the spinal cord. It is then referred to the dermatome of that level. Note that all pain for the gastro-intestinal tract and related structures is midline because of its origin from the midline "gut tube". Pain from the urinary tract can "lateralise" as it was formed bilaterally

AUTONOMIC REFERRED PAIN

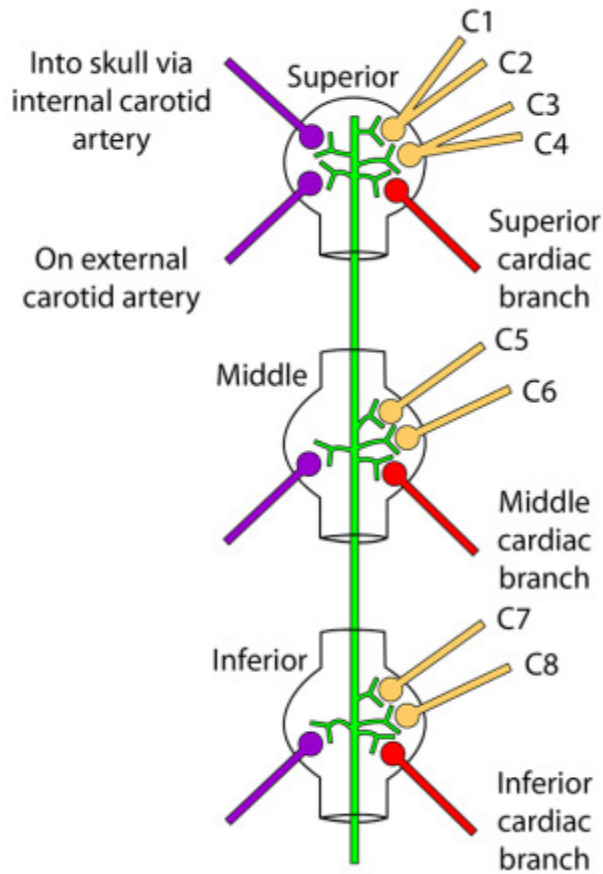
General visceral afferents from the heart (via sympathetics) refer pain to:
 Neck
 Left arm
 Epigastrium

Note that the T5,6 sympathetics not only supply the **heart** but also the lower **oesophagus and stomach** so the body can confuse indigestion with coronary pain.






SUMMARY OF SYMPATHETIC DISTRIBUTION BEYOND CHAIN

- Cervical vascular
- Somatic
- Preganglionic
- Postganglionic



**Cervical sympathetic ganglia
(All branches are postganglionic)**

-  Somatic branches
(Vasomotor
Sudomotor
Pilomotor)
-  Visceral branches
-  Vascular branches