Olfactory Nerve (CN I) – Detailed Summary

Anatomy:
• ~20 branches from bipolar cells in olfactory epithelium.
• Fibres pass through cribriform plate → synapse with mitral & tuft cells.
• Axons continue as olfactory tract → medial & lateral striae → primary olfactory cortex.

Function:
• Carries smell sensation to olfactory bulb → cortex (uncus, periamygdaloid, prepyriform).

Causes of Anosmia:
• Nasal disease, smoking, head injury, tumours, Parkinson's, meningeal inflammation.

Testing:
• Use familiar odours: coffee, almonds, chocolate, lemon oil, peppermint.
• Avoid asafoetida & musk (useless).
• Steps: check airway → test each nostril → identify smell → compare → distinguish.

Parosmia:
• Seen in incomplete recovery post-head injury.
• Also occurs in depression, schizophrenia, conversion disorders.

Difficulties:
• Test subjective; ammonia stimulates trigeminal not olfactory nerve.
• Olfactory groove meningioma = common cause; inferior frontal glioma more likely in practice.

Category	Interpretation
Recognize + Name	Normal
Recognize only	Normal (common in men)
Detect but not name	Normal
Distorted smell	Parosmia
No smell	Anosmia
Vague response	Suggests long neurological evaluation

Flowchart: Olfactory Pathway

Olfactory Epithelium → Bipolar Neurons → Cribriform Plate → Olfactory Bulb (Mitral/Tuft Cells) → Olfactory Tract → Medial & Lateral Striae → Primary Olfactory Cortex (Medial Temporal Lobe)