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An 87-year-old man presented with noisy breathing of one day duration. Symptom of hoarseness appeared several months before this acute respiratory distress episode. A neck radiograph on anteroposterior view was obtained (**Panel**).

What sign does the radiograph show and what is the diagnosis?

Answer: refer to page 126

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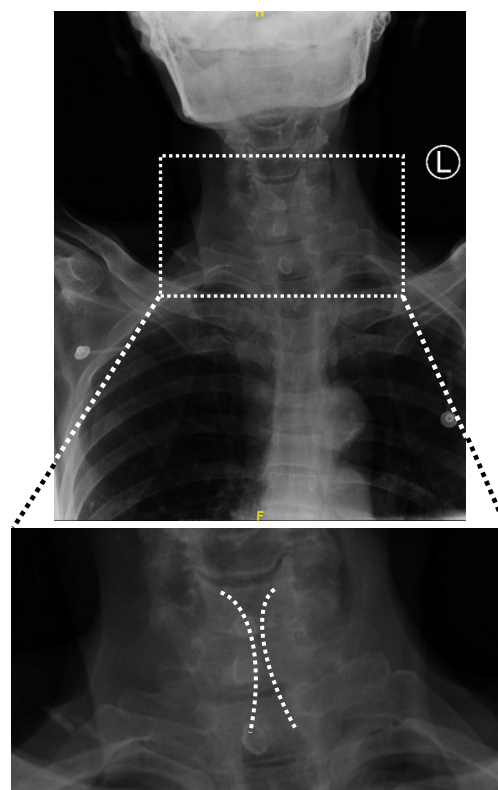
Answer: Steeple sign secondary to a laryngeal carcinoma

The radiograph (**Panel**) showed narrowing of the airway at the subglottic area, with the narrowest part at the glottic region (Steeple sign) secondary to a soft tissue mass at larynx, and in this case a laryngeal carcinoma with subglottic extension.

The Steeple sign is defined as narrowing of the upper airway due to oedema of the soft tissue. It is pathognomonic of croup. In a normal antero-posterior neck radiograph, there are bilateral convexities of subglottic trachea. These convexities are lost due to mucosa swelling or oedema.

Croup is the most common six months to three years old. However in this case the history is very suggestive of laryngeal carcinoma as the initial history was hoarseness. Thus Steeple sign is not exclusively for croup, and in most cases, if the sign is appearing in an elderly, laryngeal squamous cell carcinoma is the provisional diagnosis.¹

In croup, hoarseness is a rare symptom besides barking cough is more prominent. Where as, the progression of the laryngeal carcinoma, will demonstrate the flow of symptom from hoarseness to upper airway obstruction. Glottic carcinoma is the commonest subsite of laryngeal carcinoma. Glottic carcinoma usually presented early with hoarseness later on will developed airway obstruction.



The dotted curves lines of the enlarged image (lower Panel) demonstrate the Steeple sign (two convexities); narrowing of the trachea.

The age of the patient at presentation, also is not suggestive of infective-origin pathology. Furthermore there was no history of fever, which is usually present in acute laryngotracheal bronchitis or croup. There were cases of sporadic adult croup reported as well, presented with fever, sore throat and cough The radiograph also revealing the positive steeple sign.² The presentation in adult croup sometimes can be with more catastrophic severe airway obstruction than the one in paediatrics.³

REFERENCES

- 1: Huang CT. Steeple sign: not specific for croup. *J Emerg Med* 2012; 43:e333-4.
- 2: Beckwith SR. A case of adult croup. *Intern emerg Med* 2008; 3:387-9.
- 3: Parimon T, Charan NB, Anderson DK, Carvalho PG. A catastrophic presentation of adult croup. *Am J Respir Crit Care Med* 2013; 187:e23-4.