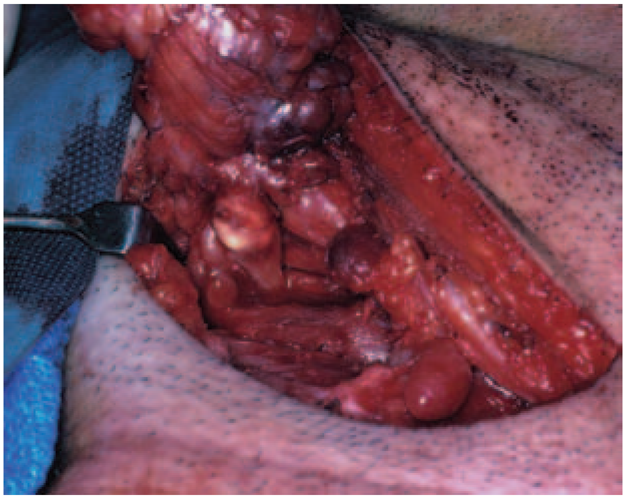

Figure 5.12e. Superior and anterior retraction of the gland allowed for identification of the sialolith that was located at the hilum of the gland.

f

g

Figures 5.12f and 5.12g. The excised gland (f) was bisected (g) and demonstrated significant scar tissue formation.

saliva in order for the stone fragments to be eliminated from the duct. Some authors have implemented a sour gum test prior to performing extracorporeal lithotripsy (Williams 1999). This test involves the patient chewing sour gum while the clinician looks for swelling of the gland. The development of swelling indicates that the gland is functional such that extracorporeal lithotripsy may be attempted. In the absence of swelling, extracorporeal lithotripsy is contraindicated, and the gland is planned for removal. Two techniques of salivary lithotripsy have been developed, including extracorporeal sonographically controlled lithotripsy and intracorporeal endoscopically guided lithotripsy (Escudier 1998). Extracorporeal shockwave lithotripsy was first used to treat renal stones in the early 1980s. The shockwaves can be generated by electromagnetic, piezoelectric, and electrohydraulic mechanisms and the resultant waves are brought to a focus through acoustic lenses. They then pass through a water-filled cushion to the stone, where stress and cavitation act to fracture the stone. At the sialolith-water interface a compressive wave is propagated through the stone, thereby subjecting it to stress. Cavitation occurs when reflected energy at the sialolith-water interface results in a rebounding tensile or expansion wave that induces bubbles. When these bubbles collapse a jet of water is projected through the bubble onto the stone's surface. This force is sufficient to pit the stone and break it. Extracorporeal lithotripsy for submandibular gland stones is somewhat less successful than that of parotid stones (Williams 1999). Ottaviani and his group evaluated the results of 52 patients treated with electromagnetic extracorporeal lithotripsy for calculi of the submandibular gland (n = 36 patients) and parotid gland (n = 16 patients). Complete disintegration was achieved in 46.1% of patients, including 15 with submandibular sialolithiasis and 9 with parotid sialolithiasis. Elimination of the stones was confirmed by sonogram. Residual concrements were detected by ultrasound in 30.8% of patients, including 9 with submandibular stones and 7 with parotid stones. Four patients with residual submandibular stones required surgical retrieval. The authors concluded by indicating that if hilar and intraglandular duct stones are smaller than 7 mm in size, they may be successfully treated with lithotripsy (Williams 1999). The surgeon should proceed with submandibular gland excision if this trial of lithotripsy is not successful, or if stones larger than 7 mm are identified.