Case 405

4. Subcutaneous emphysema, pharyngeal emphysema, mediastinal emphysema

【Progress】

Under watchful observation, volume emphysema was decreasing without intervention treatment such as airway assure.

【Discussion】

Our patient experienced massive subcutaneous emphysema after root cavity treatment using NAOCL which is conducted for tooth cavity infected by bacilli. NAOCL is most often used for detergent fluid because NAOCL is the most effective of the cleaning agents. Sterilization rate for infected cavities using NAOCL is more than 90%. Diluted NAOCL 5-6 % is commonly used because high density NAOCL injures the surrounding tissue (1,2). However, this detergent would not create subcutaneous emphysema.

Air turbines are used for root cavity treatment. They are high-speed-rotation dental drills with the use of compressive air whose volume, 25-40L/min associated with infusion of 60mL/min water to cool down the instrument. The air pressure of air turbines is 1.8-4.0 kg/cm3 (3-7).

In our case, the right 4th tooth with cavity was treated using air turbines. High pressure compressive air was inflowed to upper jaw sub gingiva tissue. Laterally, high pressure air inflowed to the loose tissue surrounding buccal muscle, mylohyoid muscle masseter muscles, reaching periorbital subcutaneous tissue. Medially, high pressure air in loose tissue sub-oral membrane, reaching parapharyngeal space and retro pharyngeal space not only laterally but also bilaterally.

Further, high pressure air inflows to mediastinum, inducing mediastinal emphysema. Parapharyngeal space communicates with anterior mediastinum, and retropharyngeal space communicates with posterior mediastinum.

In our case, massive air accumulation is acknowledged; upper ward, from the loose tissue surrounding masticatory muscles: masseter muscle, temporal muscle, lateral pterygoid muscle, medial pterygoid muscle to buccal and periorbital subcutaneous tissue: lower ward, from the loose tissue surrounding masticatory muscles to hypoglossal space, submandibular space, parapharyngeal space, retropharyngeal space, finally to anterior and posterior mediastinum. Although massive air volume was present, this air accumulation was not yet to come to narrow trachea, indicative of no need airway assure. As time progresses, air accumulation gradually decreased.

【Summary】

We presented a fifty-two-year-old female for massive subcutaneous emphysema after root cavity treatment using NAOCL. High pressure air inflow into sub gingiva tissue is responsible for massive air accumulation at loose tissue surrounding para-orbit, masticatory muscles, sub hyoid space, sub mandibular space, parapharyngeal space and retropharyngeal space. As time progressed, the massive air disappeared with no complication. It is borne in mind that parapharyngeal space communicates with anterior mediastinum and retropharyngeal space communicates with posterior mediastinum.

【References】

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