

Oral ulceration caused by direct contact with residual ferrous sulfate

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An 83-year-old man with hemiplegia and aphasia after a left thalamic hemorrhage visited our hospital for swelling and pain in the right cheek. He required assistance with all activities of daily living in a nursing home. He was taking dried ferrous sulfates for chronic iron-deficiency anemia, but he had difficulty swallowing because of hemiplegia and sometimes retained food in the oral cavity before swallowing. Intraoral examinations showed many granulated materials with a metallic smell on the right gingivobuccal fold (Fig. 1A). After the removal of the granulated materials, dark brown discoloration was seen at the gingivobuccal fold and buccal mucosa (Fig. 1B). Dried ferrous sulfates, thought to be the cause, were discontinued. Due to contact pain during meals, the patient was hospitalized for nutritional management, including parenteral nutrition. On the fourth day of hospitalization, the oral mucosa had ulcerated, and necrotic tissue and bleeding were observed in some areas (Fig. 1C). Because the entire ulcer was covered with necrotic tissue on the fifth day of hospitalization (Fig. 1D), debridement was performed during hospitalization. Due to an increase in oral intake, the patient was discharged on the 10th day of hospitalization. Because the oral mucosa had almost completely epithelialized at the first outpatient visit, 8 days after the discharge, we asked his family doctor to change his iron supplement to another one.

Treatment of iron-deficiency anemia is commonly based on oral iron supplementation.¹ Although iron overdose is thought to have a direct corrosive effect leading to mucosal

necrosis and ulceration, mucosal damage has been reported very rarely in patients receiving therapeutic dosages of ferrous sulfate.¹ The hypopharyngeal, esophageal, gastric, tracheobronchial mucosal toxicity caused by ferrous sulfate have previously been reported,¹ but oral ulceration caused by residual ferrous sulfate was extremely rare.^{1–3} To our knowledge, only 4 cases (patients' age range: 78–87 years), including the present case, have been reported in detail.^{1–3} Two cases had ulcers of the gingivobuccal fold and buccal mucosa, while two cases had ulcers of the tongue and oral floor. Three cases took ferrous sulfate tablets orally, but one case crushed them before use. Three patients presented with senile dementia, and such patients may have difficulty expressing discomfort and pain.¹ In the French National Pharmacovigilance Database, there were nine cases of oral ulceration associated with the use of ferrous sulfate tablets.¹ The only suspected medication was always ferrous sulfate, and all cases of oral ulceration promptly disappeared or improved after withdrawal of this treatment, while there were no cases with oral ulceration that were associated with other iron preparations.¹

Because dysphagia and cognitive impairment associated with aging and disease may increase the risk of mucosal toxicity of ferrous sulfate, routine check of the patient's oral cavity is recommended to avoid the remains of food and drugs by nursing staff and others.² Furthermore, appropriate pharmaceutical formulations such as syrups or other iron preparations should be administered to avoid the risk of oral

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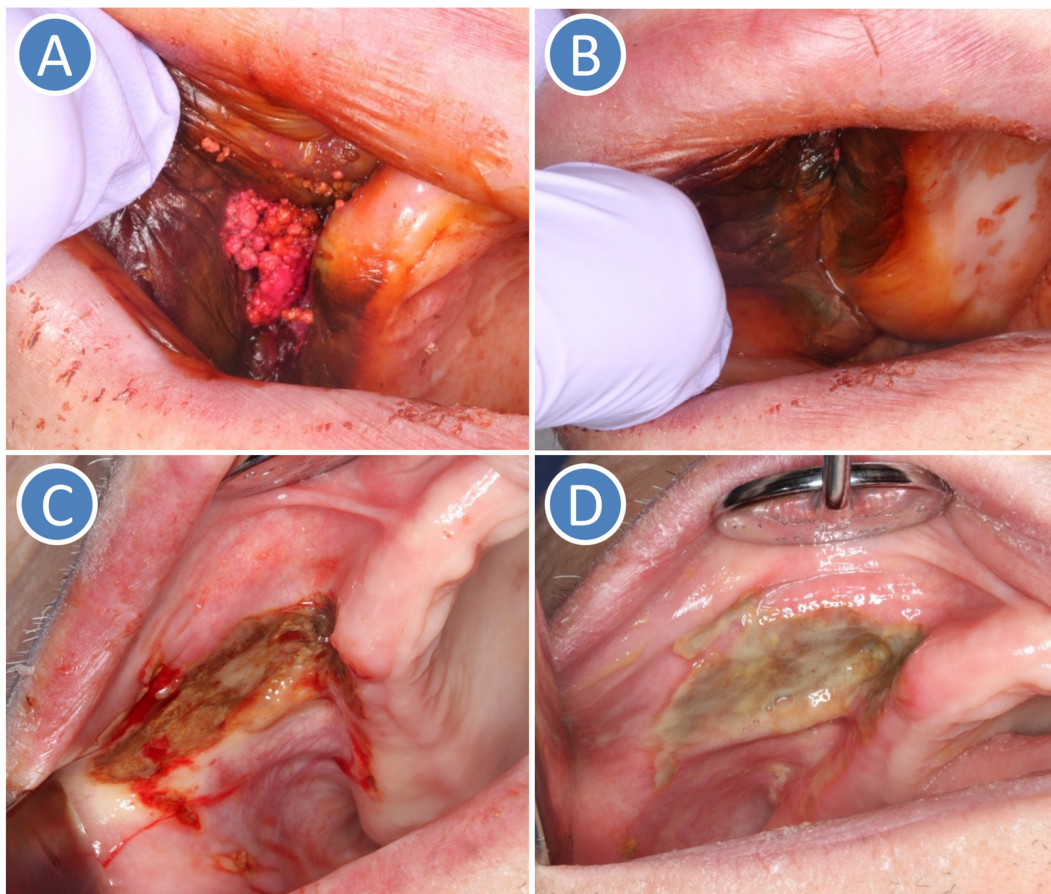


Figure 1 Intraoral photographs of our patient with ferrous sulfate-induced oral mucosal ulceration. (A) There were many granulated materials with a metallic smell on the right gingivobuccal fold, (B) Dark brown discoloration was seen at the gingivobuccal fold and buccal mucosa after the removal of the granulated materials, (C) The oral mucosa had ulcerated, and necrotic tissue and bleeding were observed in some areas, (D) The entire ulcer was covered with necrotic tissue.

ulceration.^{1,3} In conclusion, dentists or oral surgeons should be aware of the diagnostic possibility of drug-induced ulcers.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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