

Sticky Situation

Do you know what this dog ate?

Here's a hint: It's a common household product and it wasn't this big when he swallowed it!

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Figure 1: "Fraser", a Lab/Hound mix shown at the time of his adoption a few months ago.

Fraser is an adorable 1-year-old male, as frisky and curious as you'd expect a dog that age to be. The 24 kg Lab/hound mix (Fig. 1), who had an inclination for oral exploration, was discovered by his owner chewing on a bottle of glue and, concerned about the risk of poisoning, immediately contacted Pet Poison Helpline (PPH).

During the initial call, PPH's Dr. Sarah Alpert learned that the pup was asymptomatic and had only been alone with the bottle of glue for a few minutes. While most of the glue remained in the bottle, the owner estimated approximately ½ of a teaspoon was missing. And while all signs indicated there was no need to worry, Dr. Alpert knew the most critical information to ascertain was the type of glue involved.

The Right Question: Which Glue?

To the average consumer, Gorilla Glue® is just another fixative. But Dr. Alpert recognized the immediate danger at hand once she found out the brand of glue ingested. Gorilla Glue® and other polyurethane glues are formulated with chemicals called diisocyanates, which pose a unique threat when ingested.

Unlike the ingredients in typical school glues or super glues, diisocyanates are a family of chemical building blocks mainly used to make polyurethane products, such as foams, coatings, adhesives, sealants and elastomers—materials formulated to expand. In a veterinary patient, ingesting a liquid or gel formulation containing diisocyanates causes the glue to expand rapidly and exponentially upon contact with liquid in the stomach. Ingestion almost always results in a complete gastric foreign body; nearly all cases of Gorilla Glue® ingestion managed by PPH have resulted in emergency gastrotomies. Therefore, Dr. Alpert recommended an immediate referral to an emergency clinic.

Fast Intervention Saves the Day

Thanks to the recommendation from the PPH veterinarian, Fraser presented to Dr. Shannon Stephenson at the Animal Emergency Hospital of the Strand in Myrtle Beach, S.C. in less than 2 hours of Gorilla Glue® ingestion. On presentation, he was stable, although abdominal palpation revealed slight tenderness and a large, extremely firm mass in the cranial abdomen.

During additional consultation with PPH, Dr. Stephenson learned that upon ingestion, Gorilla Glue® combines with the liquid in the stomach to set off an expansion reaction. Abdominal radiographs were recommended as the first diagnostic step, and revealed a greatly expanded stomach containing semi radio-opaque material (Fig. 2 a & b). Given the history of glue ingestion, coupled with the firm mass noted on abdominal palpation, a glue foreign body was the most likely rule-out. Differential diagnoses include food bloat or other foreign material in the stomach such as batting or stuffing from a toy.

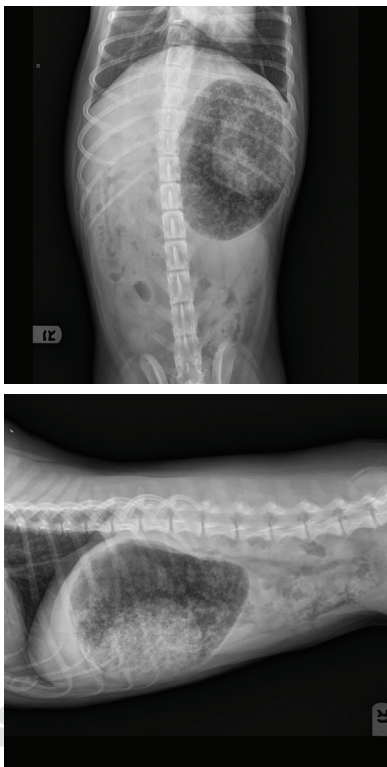


Figure 2 a & b: Radiographs of a 1 yr old, 24 kg Lab/hound mix with a history of ingesting ~ ½ teaspoons of Gorilla Glue 3 hours earlier.

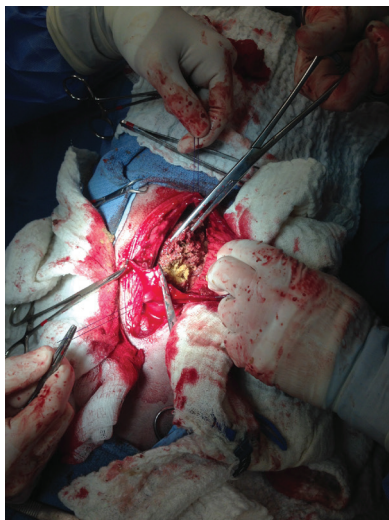


Figure 3: Gastrotomy reveals large, extremely firm mass of glue and ingesta in the gastric lumen.



Figure 4 a & b: Mass of Gorilla Glue and ingesta surgically removed from the stomach 4-5 hours after ingestion of ~½ teaspoon of product.

Approximately 3–4 hours after ingestion, while no vomiting was noted, Fraser began regurgitating clear fluid and developed severe abdominal pain. A gastrotomy performed 4–5 hours following ingestion, revealed a greatly distended stomach that was described as feeling like it was full of cement (Fig. 3). Dr. Stephenson commented that, due to the large amount of glue in the stomach, she was unable to properly exteriorize the stomach and, because of the extremely firm consistency of the glue mass, it was necessary to break the mass into several pieces to facilitate removal (Fig. 4). The gastric mucosa appeared mildly to moderately irritated and inflamed, although no erosions or ulcerations were present. No sign of glue was present in the esophagus or small intestine.

Fraser's Outcome: A Positive Prognosis

Fraser recovered uneventfully over the evening and began eating the following day. Three days post-op, Fraser's owner reported that he appeared bright and alert, was able to rest comfortably, and tolerated short leash walks. One week post-op his staples were removed and he was well on the road to recovery.

Fraser's case is typical of many of the diisocyanate glue ingestions that PPH encounters: nearly all cases result in gastric foreign bodies. To date, esophageal and intestinal foreign bodies have yet to be reported. Provided that patients undergo surgery prior to significant clinical illness (due to secondary dehydration, electrolyte imbalance, GI necrosis, etc.), the prognosis is excellent and a full recovery is expected.

Non-Toxic Doesn't Mean Non-Dangerous

Most glues and adhesives are relatively non-toxic, but may pose a risk for expansion (e.g. diisocyanate glues) or tissue adherence (e.g., cyanoacrylate glues, often called "super glues"). Some adhesives also contain large concentrations of solvents that can result in systemic effects.

In general, when clients report pet exposures to glue, it's essential to determine the brand name and type of glue involved in order to create an appropriate treatment plan. It's just one of the reasons that we make consultation with PPH's veterinarians available 24/7—assisting veterinary professionals and their clients with such exposures in a fast, responsive fashion is essential to protecting patient health.

See For Yourself

You can experience the expansion phenomenon of Gorilla Glue® yourself by mixing diisocyanate glue and a bit of water in a plastic baggie. Give the bag a few gentle squeezes to mimic peristalsis to see and feel how the mass changes in density and size over 15-30 minutes; it's an excellent demonstration for your staff to experience for themselves how concerning diisocyanate glues can be.