

Temporary Rumenostomy for the Treatment of Forestomach Diseases and Enteral Nutrition

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KEYWORDS

- Rumen • Forestomach • Rumenostomy • Fistula • Enteral feeding • Bloat
- Obstruction • Foreign body

KEY POINTS

- Temporary rumenostomy is a useful procedure for management of chronic rumen tympany, rumen distension, rumen dysbiosis, and enteral feeding or medication administration.
- Temporary rumenostomy has minimal postsurgical management and complications directly related to the surgery are uncommon.
- The rumenostomy stoma often closes by second intention in 3 to 4 weeks.
- Surgical closure of the rumenostomy can be performed if early closure is warranted or if the stoma does not close by second intention.

INTRODUCTION

The unique anatomic and functional characteristics of the forestomach in ruminants and the first gastric compartment in pseudoruminants (New World camelids) allow the surgical placement of a permanent or temporary portal or stoma into these compartments for medical treatment and research studies. The term ostomy refers to the surgical placement of a permanent or temporary opening between 2 hollow organs or between a hollow organ and the external body surface. Alternatively, the term otomy refers to the act of incising into a hollow organ.

A rumenostomy is a surgical procedure that results in an opening between the lumen of the rumen and the surface of the abdominal wall. The term rumen fistula is

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often mistakenly used instead of rumenostomy. Technically, a fistula is a communication that is not intentionally created. In pseudoruminants such as llamas and alpacas, the major fermentation organ is the first gastric compartment and the proper term is a first compartment gastrostomy.

Surgical rumenostomy (or gastrostomy) is a useful procedure that allows both the egress of rumen gas and contents and the delivery of rumen microflora (transfaunation), medications, and feed directly into the rumen.^{1,2} A Permanent rumenostomy is generally fitted with a rubber cannula and provides long-term access to the rumen contents, particularly for collection of rumen fluid for transfaunation. Procedures for traditional rumenostomy and cannulation are well described.¹⁻³ The temporary rumenostomy is more common for medical treatment of patients with forestomach indigestion, tympany, or dysbiosis. They are also used for direct enteral feeding. When the rumenostomy is no longer needed, it can be allowed to close by second intention, or it can be surgically closed. This article discusses the indications, surgical procedure, enteral feeding, management, and closure of a temporary rumenostomy.

INDICATIONS

Temporary rumenostomy can be performed in any ruminant and is a useful surgical procedure in cattle, sheep, and goats. A similar procedure can also be performed in New World camelids (llamas and alpacas) but in these species the procedure is technically a temporary gastrostomy of the first gastric compartment. The decision to perform a temporary rumenostomy is based on multiple considerations of the underlying problem and the therapeutic goal. In one retrospective study, the underlying disease process in 24 cattle that underwent therapeutic temporary rumenostomy included vagal indigestion (3), pneumonia (5), abomasal impaction (2), pharyngitis or esophagitis (2), and lymphoma (1).⁴ There are 4 general medical indications for which a rumenostomy may be considered: (1) to relieve rumen distension, (2) for removal or lavage of rumen contents, (3) to restore normal rumen microflora, and (4) for enteral feeding or repeated enteral medications. In many cases, multiple indications and therapeutic goals may be present for an individual patient.

Rumen distension and dysmotility are discussed in depth in Derek Foster's article, "[Disorders of Rumen Distension and Dysmotility](#)," in this issue and in other references.^{2,5} Generalized rumen distension is evident by gross enlargement of the left abdomen, and in some cases also the right ventral abdomen. Rumen distension may be caused by abnormal forestomach motility, intestinal obstruction, generalized ileus, or abnormal contents (frothy bloat) and results in excessive accumulation of gas, ingesta, or fluid in the rumen (**Box 1**). A rumenostomy may be performed to relieve rumen distention as an adjunct to other treatments. In most cases a rumenostomy is not performed until after other medical or surgical treatments are attempted and are unsuccessful in relieving the rumen distension. It is important to understand that even if the underlying disease is corrected, normal forestomach motility may not return until rumen distension is resolved. Immediate relief of rumen distension benefits the patient by decreasing the abdominal pressure that impedes both respiratory and cardiovascular function. In cases in which the underlying medical condition is already resolved, relief of rumen distension and establishment of normal rumen microflora can result in improved forestomach motility and appetite.

Relief of rumen gas accumulation (gas bloat) should first be attempted by passage of a stomach tube. However, frequent repeated intubation may not be practical in cases of chronic recurrent gas bloat and rumen tympany. Recurrent ruminal tympany is observed in some calves with acute and chronic respiratory disease. The cause is

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