

Tympany and Torsion of the Abomasum in Calves

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Introduction

Diseases of the abomasum in calves and juvenile cattle have been gaining in significance over the past decade. In addition to abomasal ulceration, displacement, tympany and torsion are part of this disease group (2, 4, 5, 10, 12, 13, 14). In particular, a high incidence of acute abomasal tympany is observed in some calf rearing enterprises, especially during the first four weeks after purchase. In this form of the disease, the dilatation of the abomasum causes it to migrate dorsally along the right flank, which leads to a twisting of the duodenum. In our case-load, abomasal tympany was accompanied by gaseous dilatation of the caecum in one-third of the patients.

Observations appear to indicate that, as in adult animals, abomasal torsion in calves is preceded by an abnormal filling and presumably also a gaseous distension of the abomasum. In addition, about half of the calves with abomasal tympany had a torsion of approximately 180°. In acute torsions the abomasum can be filled almost exclusively with fluid. For this reason, the aetiology may involve a primary torsion similar to that observed in canine gastric torsion (10).

Incidence

Abomasal torsion and tympany can occur in all ages of calves and in either sex. However, in our case-load, a higher incidence could be observed among male animals in the six to twelve week-old age group (Figure 1). The feeding regime appears to play a decisive role in the pathogenesis of the condition; afflicted animals are usually in the process of being weaned but are still receiving significant quantities of milk replacer or even cow's milk in addition to solid feed (Fig. 2). Similar conditions have been described for artificially reared lambs with abomasal tympany (11). Investigations have shown that the cause of the tympany is related to the increase of gas-producing abomasal microorganisms (9). Rapid consumption of large quantities of liquid feed can have a predisposing effect, particularly when the feed contains non-soluble, fermentable components such as soy flour. In studies of the condition in lambs, tympany could be prevented by the addition of a 37% formaldehyde solution to the milk substitute (equivalent to 0.05% dry matter volume).

Fig. 1: Age distribution of 37 clinic patients with abomasal tympany or torsion

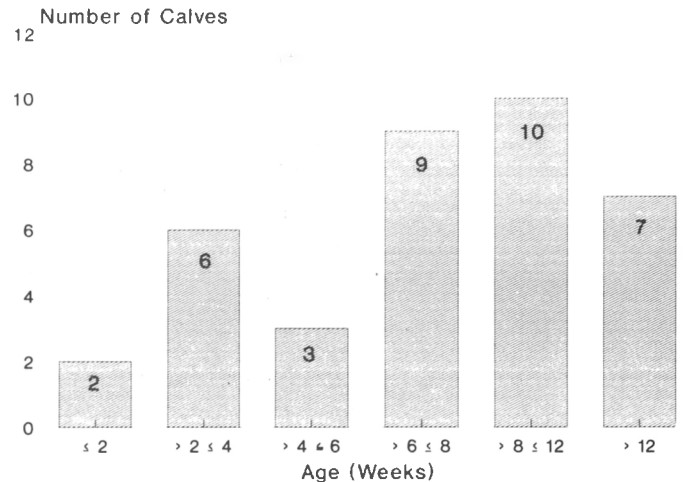
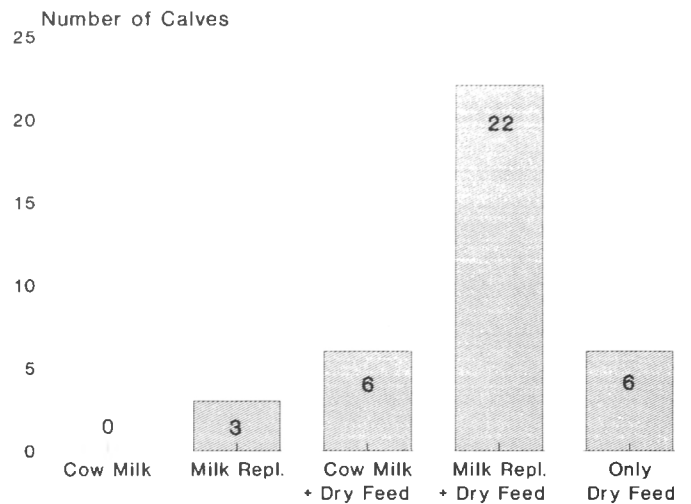


Fig. 2: Previous feeding regime of 37 hospitalized calves and juvenile cattle with abomasal tympany or torsion



Symptoms and Diagnosis

Afflicted animals usually suddenly became anorexic and appeared lethargic or occasionally restless. Definite colic symptoms consisting of treading on the spot and kicking against the abdomen were observed in about half the animals with an abomasal torsion - less frequently in those cases where only tympany was present. Patients with pro-

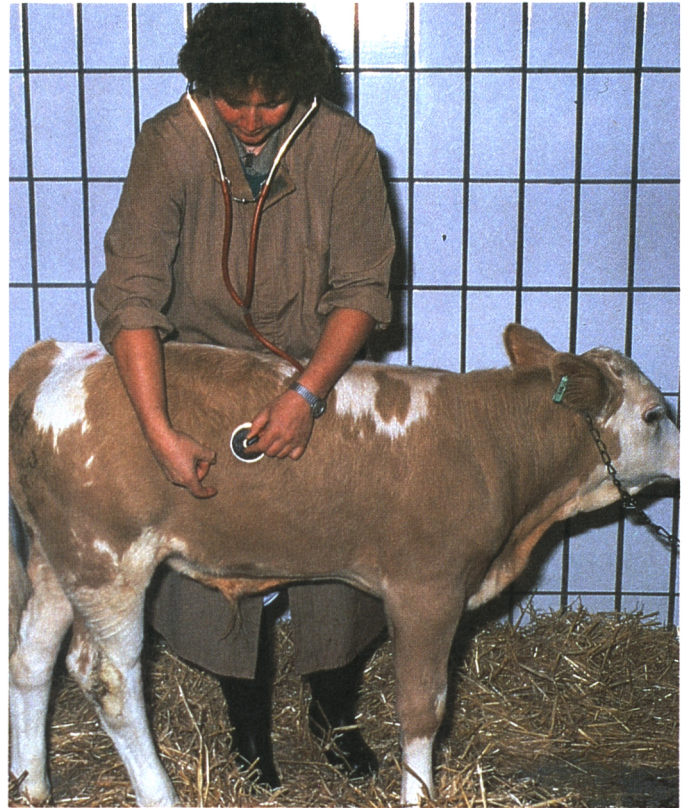
nounced tympany or marked torsion showed a rapid worsening of condition and onset of shock mechanisms. The right flank was generally bulged out (Fig 3), and in animals with severe gaseous dilatation the entire abdomen was tautly distended. Such cases are occasionally mistaken for ruminal tympany. Over the dilated abomasum, splashing and metallic sounds could regularly be elicited on auscultation with simultaneous ballotment of the abdomen (Fig. 4). The faeces are usually of a thick consistency, though in 17 of 37 cases reviewed, the initial examination revealed only traces of dung or no faeces in the rectum. Eight calves had an obvious melaena.

Fig. 3 Calf with abomasal tympany: distension of the right flank



In six of 21 examined ruminal fluid samples, the chloride content was over 60 mmol/l. However, the diagnostic significance of this parameter is considerably less in calves than in adult cattle, as high ruminal fluid chloride concentrations can be caused not only by abomaso-ruminal reflux (3) but also by so-called ruminal drinking of milk replacer feed or electrolyte solutions (6).

Fig. 4: Percussion auscultation of the right flank to determine presence of metallic sounds ("Steel Band Effect")



Blood gas analyses were performed on 37 animals, and about half showed a moderate to marked metabolic alkalosis, whereas four had a slight and three a marked metabolic acidosis (Fig. 5). The latter were three calves with abomasal torsion and advanced changes in the abomasal wall; additionally in one case an abomasal ulcer had perforated into the abdomen. These three patients could not be saved. Accordingly, the development of a severe metabolic acidosis appears to signify a worsening prognosis in calves, as in adults with abomasal torsion (7, 8, 15).

Therapy

In calves with an abomasal tympany or torsion, a right-sided laparotomy with the animal in lateral recumbency is the treatment of choice. If the general condition is markedly reduced, simultaneous intravenous fluid therapy is also required to support and stabilize the circulation. The abomasum is exteriorized (Fig. 6, 7) and is deflated by paracentesis; a torsion, if present, can then be corrected. If the abomasum contains much fluid, it may be necessary to incise the organ and siphon out the contents.

In general practice, attempts are frequently made to let off the gas through a needle inserted via the right body wall into the abomasum. Although in some cases the tym-

Fig. 5: Blood gas findings - here base excess (BE) - of 36 calves or juvenile cattle with abomasal tympany or torsion

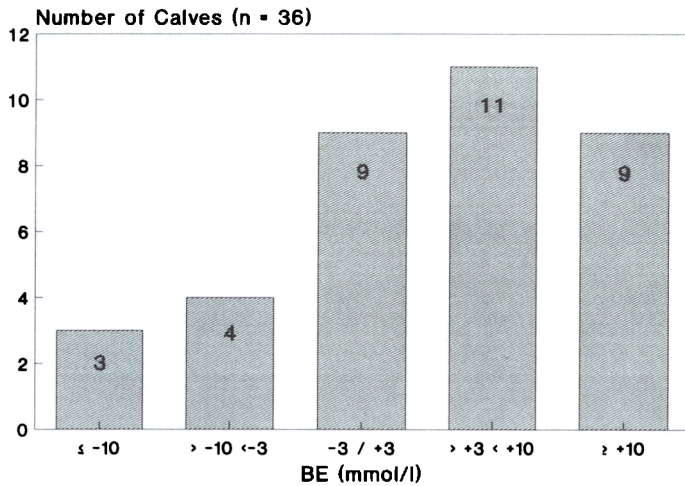


Fig. 6: Severe gaseous distension of the abomasum in a calf: intra-operative finding

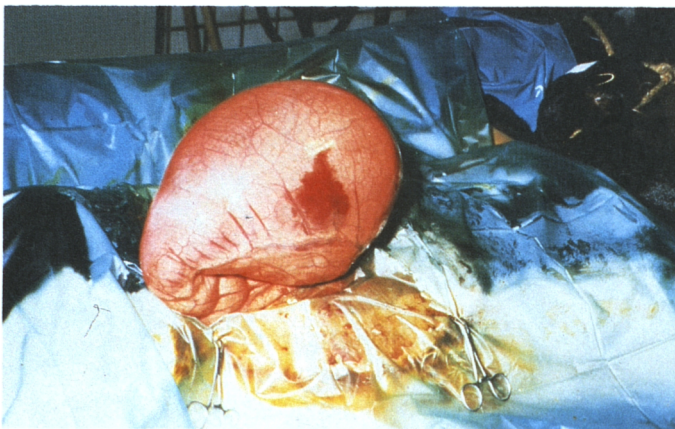
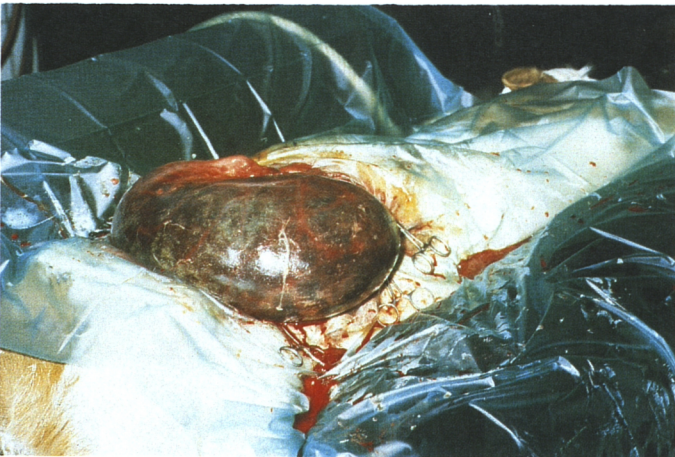


Fig. 7: Abomasal torsion of 360°: intra-operative finding

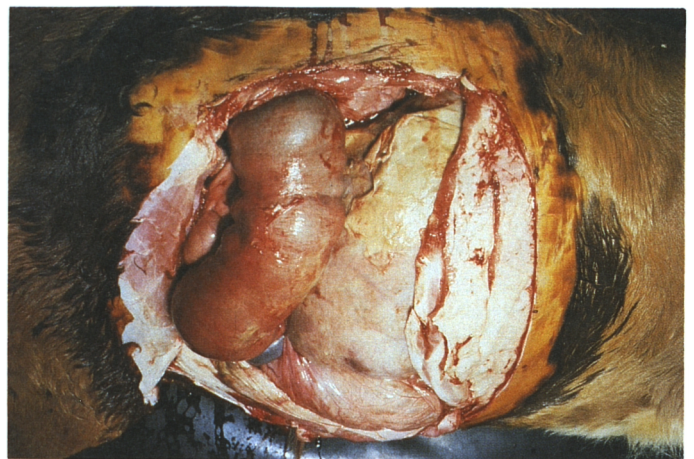


pany may be alleviated by this method, the risks of the procedure should not be underestimated. If the abomasum has not been completely emptied, its gaseous or liquid contents may be expelled by increased pressure through the puncture site into the abdomen. Six of the 37 reviewed patients in 1989 with dilatation and right-sided displacement of the abomasum were already suffering from peritonitis at the time of admission, due to paracentesis (Fig. 8, 9).

Fig. 8: The right flank of a calf with right-sided abomasal displacement on admission, showing numerous puncture sites. The flank was only shaved immediately pre-op



Fig. 9: Same calf as Fig. 8, after abdominal incision. Marked fibrinous peritonitis as a result of repeated trans-abdominal paracentesis of the dilated and displaced abomasum.



In securing a favorable prognosis, it is essential that calves with abomasal tympany or torsion are treated surgically as soon as possible, that is, within a few hours of the first appearance of appropriate symptoms. Alternatively, if this should prove impracticable, paracentesis must be performed with due regard to shaving and disinfection of the

site and appropriate needle length. Preventive measures involve strict avoidance of feeding errors during the weaning phase, such as excessive quantities of milk or milk replacer or mixing it with bran or concentrates. There appear to be no reports of studies into the efficacy or possible risks of using microbe-inhibiting substances prophylactically in the calf.

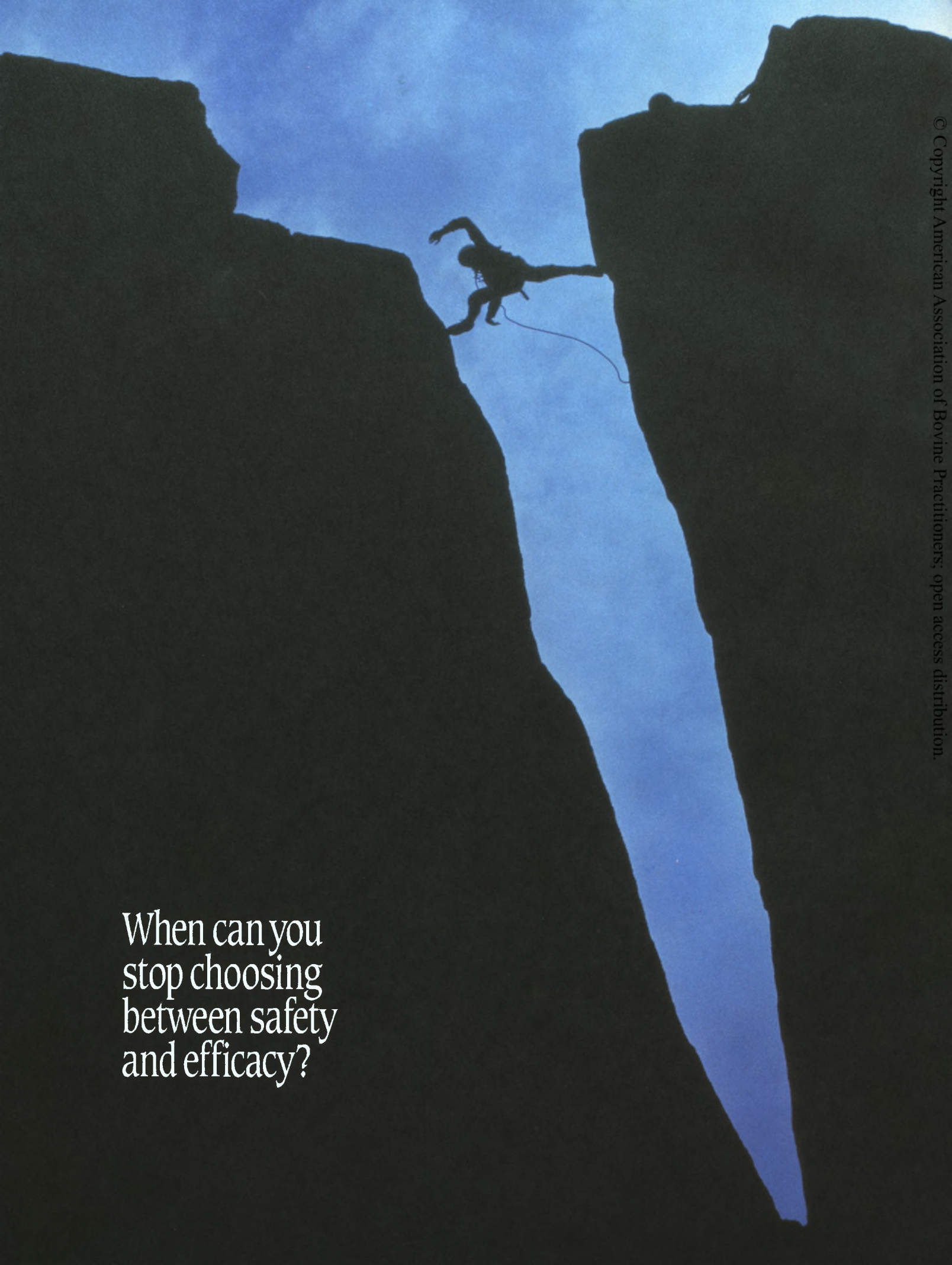
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