Rappel Error – Inadequate Anchor Knot

Colorado, Raggeds Wilderness, Dark Canyon

In early January, two Colorado ice climbers began their third first ascent of the day in the Dark Canyon, 25 miles south of Redstone in the Raggeds Wilderness. Duane Raleigh (age 56, with 43 years of experience) was leading the first pitch of the WI3+ M4 route. Due to thin ice, the only protection he placed on the 230-foot pitch was a stubby screw at approximately 75 feet. Raleigh reached the end of the rope without finding an anchor, so he asked his partner (40 years of experience) to take him off belay, so he could continue climbing and searching for an anchor.

Raleigh spotted a precarious stack of granite that he thought might be secure enough to sling for a rappel anchor. He tested the pile by hitting it with a tool and then pulling on it. Although apprehensive about the anchor's stability, he had no better option, so he wrapped a 10-foot 6mm cord around the rocks and tied the ends together with a flat figure-8 knot, visually checking and tugging the knot to test it. He then clipped his rope to the cord with a carabiner, planning to downclimb most of the route to minimize weighting the anchor.

Due to the steepness of the first 10 feet of this descent, Raleigh leaned back and weighted the rope. He ended up in a free fall and landed 15 feet below, upside down, in a small patch of soft snow in a dihedral. He was uninjured except for two crampon punctures in his thigh. Raleigh climbed back up, expecting that the anchor rocks had failed. Instead, he found an untied 6mm cord. He retied the cord with a retraced figure-8 bend (Flemish bend) and successfully downclimbed and lowered to the good screw he'd placed at 75 feet. He pulled the rope and then lowered to the ground from the screw. (Sources: Rock and Ice magazine and Duane Raleigh.)

ANALYSIS

Although not verifiable by the climber, it is possible that the at figure-8 may have capsized under load, flipping and rolling down the cord until the knot reached the ends of the cord and untied. Both the flat figure-8 and the at overhand knot have been used to join two rappel ropes, and both can capsize under heavy loads. However, a well-tied at overhand is much less likely to do so and is strongly recommended over the at figure-8, which accounts for most reported failures of this general category of rappel knot.

When tying the at overhand to join two rappel ropes, always tie a well-dressed knot and leave long tails (15 to 18 inches). Individually tighten all four strands of rope entering the knot. If using ropes of different diameters, age, or condition, or icy or wet ropes, consider tying a second overhand immediately adjacent to the rst as a backup, though this will increase the bulk of the knot. Or, if there are no concerns about the knot snagging when the rappel ropes are pulled, consider the double fisherman's knot or Flemish bend, which are very reliable, albeit more difficult to untie after loading.

Do not use the at overhand to join ropes permanently (e.g., tying a cordelette or tying a rope around a tree for an anchor). The double fisherman's knot is preferred for these purposes. Also, do not use the flat overhand for tying slings or webbing. Use a water knot for slings that may be retied and a double fisherman's for permanent knots. Again, dress all knots carefully and tighten every strand. (Sources: Rock and Ice magazine and the Editors.)

Images

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