

Rappel Failure – Inadequate Anchor, Inadequate Belay

Arizona, Camelback Mountain

Just after sunrise on August 8, Phoenix firefighter Gary Johnstone, 50, and three teenage boys set up a short rappel (about 40 feet) at an outcrop known as the "Sugar Cube" that is frequently used for rappelling practice. Their anchor was a single, large eyebolt cemented into the rock. One boy, Johnstone's son, successfully rappelled to the ground. The second boy had started his rappel, belayed by Johnstone from the top of the cliff using a strand of the same rope, when the connection to the bolt anchor apparently failed. The rappeller fell to the ground, and both Johnstone and the third boy fell or were pulled off the top as well. Johnstone and one of the boys, Trevor Crouse, 15, later died from their injuries. The other boy who fell survived.

Analysis

Although this was not a climbing accident, it involved misuse or failure of climbing systems and equipment. Johnstone, who had rappelling experience and served with the fire department's technical rescue team, had set up the rappel with an orange sling either tied through the anchor bolt or clipped to it as the primary anchor. As backup, Johnstone was belaying the rappellers with one end of the rappel rope as they descended.

Investigators found the bolt intact. The sling used for the primary anchor has since disappeared, but was seen in a photograph taken by a hiker moments before the accident. This orange sling appeared very similar to another sling found among Johnstone's equipment at the crag, and this second sling had been tied with a flat overhand bend instead of the standard water knot (a.k.a. ring bend.) The flat overhand is known to "roll" under load. Although the flat overhand can be used safely for joining climbing ropes for rappels (leaving tails 10 to 12 inches long in case of rolling), it is not recommended for joining the ends of nylon webbing, which is slipperier than rope. If this method was used to tie the anchor sling that day, it's likely the sling held the weight of the first rappeller but the flat overhand bend rolled and loosened, without being observed, until it reached the point that the knot failed as the second rappeller started down the cliff.

It's unknown why the two people on top of the cliff fell, nor is it clear how Johnstone had anchored himself as he belayed the rappellers. If Johnstone had tied the rappel rope into the anchor sling and the rappellers were descending a single strand, he may have been anchored with the second strand and using the remainder of that strand to belay. His anchor thus would have failed when the sling failed. Or he may have had a separate anchor that also failed. The other boy on top reportedly was tethered to Johnstone and so either was pulled off when the older man fell or was entangled in the rope when the primary anchor failed.

Two key lessons emerge from this unfortunate incident: 1) Tied nylon slings must be joined with a water knot (ring bend) with tails at least two to three inches long protruding from the knot; and 2) Each climber or rappeller at an anchor station should be tethered to the primary anchor or a solid back-up. Although there are times (such as cramped belay transitions) when it makes sense for one climber to anchor temporarily to another, the securest method is to clip or tie into the primary anchor independently.

(Source: The Editors, with information from news reports and correspondence with Phoenix New Times reporter Ray Stern.)

Images

Article Details

Author	
Publication	ANAM
Volume	10
lssue	68
Page	42
Copyright Date	2015
Article Type	Accident reports