



AAC Publications

GROUND FALL—Broken Carabiner

California, Mickey's Beach, Kombucha Crag

At 10:30 a.m. on May 14, Climber 1 (male, 27) and Climber 2 (male, 26) arrived at Kombucha Crag, a waterfront cliff north of San Francisco. They both had over four years of climbing experience, indoors and outdoors.

After several hours of climbing, three of the group had their eyes on Chimney Diver (5.11c), a 35-foot bolted route. They noticed a few hazards:

1. The rock was crumbly at the start.
2. The climb is overhanging, meaning a falling leader might hit the wall behind the route.
3. There were two belay locations: one at the base of the wall, the other on a ledge from which the climbing actually starts.

One climber led the route and left the quickdraws in place. Climber 1 decided to lead the route with the draws in place. He pulled the rope, and despite his efforts to leave it through the bottom draw, the rope pulled completely through.

The group was new to stick-clipping. Instead of stick-clipping the rope directly to the draw hanging on the second bolt, they decided to clip another quickdraw into the hanger. They also decided to clip the new draw behind the original draw to prevent the new draw from levering against the other carabiner. They deemed that having two carabiners in one bolt would not be an issue. The bolts were titanium glue-ins.

Climber 1 started up with the rope running through the newly stick-clipped second draw on the second bolt. The rope was back-clipped, running through the carabiner from the front, toward the rock, and then to his harness tie-in. He also did not clip the first bolt. With the pre-clipped bolt two feet to his right and at knee level, he fell. His rope caught him, and about a second later there was a sudden "PING!" noise and the quickdraw separated from the bolt.

Climber 1 and Climber 2 (the belayer) collided. The impact knocked Climber 2 off the ledge. Climber 1 believes he struck the ledge with his back and then flipped headfirst toward the ground, another ten feet below. Both Climber 1 and the belayer hit the ground and quickly stood up in shock. Climber 2 had hit his head on a rock on the ground. A clump of his hair was missing, but he was otherwise uninjured. Climber 1 was in shock and felt nauseous and light-headed, with abrasions on his right elbow. He also was experiencing pain in his lower back along with a burning sensation in his right thigh.

One of the group members called 911. They were told a helicopter would be sent because it would be dangerous to perform a carry-out, given the rocky and steep terrain to get back to the road. Climber 2 (the belayer) was cleared by the EMTs. Climber 1, suffering a bad hematoma and a minor bulged disc, was taken to the hospital and discharged the following day.

ANALYSIS

The quickdraw that had detached from the second bolt still had the rope clipped through the bottom carabiner. The upper carabiner was bent sideways out of alignment and stuck in a fixed position.

Climber 1 wrote:

1. As I performed the rock-over move, I was to the side of the bolt and the rope might have pulled the quickdraw sideways. As I fell, the quickdraw carabiner might have been caught on the other and could not rotate back to the bottom of the hanger. This would have caused the gate to be cross-loaded (or opened).*

2. Because the quickdraw was stick-clipped behind the original draw, it's possible the gate got caught on the other quickdraw and never closed. This is harder to imagine because the carabiner would likely fall off before the gate saw significant load to bend it out of alignment.

3. The quickdraw that failed was back-clipped. We knew this as soon as we clipped the draw but figured I would be able to fix it once I got to a comfortable stance, and I would not be above the bolt. Additionally, the direction of the fall and the direction of the gate were such that we could not imagine the rope snagging the gate. The back-clipping could have caused the draw to twist during the fall, and that could have levered on the gate.

* Editor's Note: The bolt in question was a one-piece, titanium glue-in that has a tapered hanger that is not designed to accommodate two carabiners. It is quite likely that the draw's carabiner had been clipped over the original as it is very difficult to clip an additional carabiner under another on such a hanger—especially from below and with a stick clip. Having observed that the draw was back-clipped, it would have been easy to stick-clip both the first and second bolt, hoist up, clip directly into either bolt, and rearrange the draws and rope in the correct manner.

The climbers were not well versed in using a stick clip and were not wearing helmets. It's also worth noting that they had clipped only the second bolt and not the first, which decreased the friction in the system and raised the force on the belayer. (Sources: Climber 1 and the Editors.)

Images

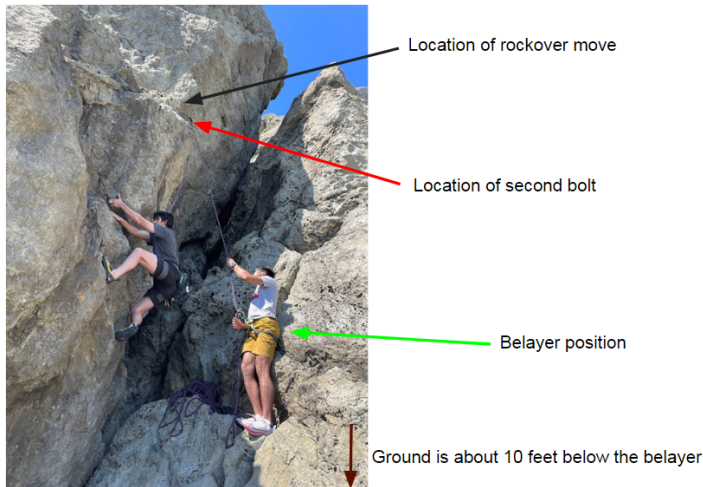
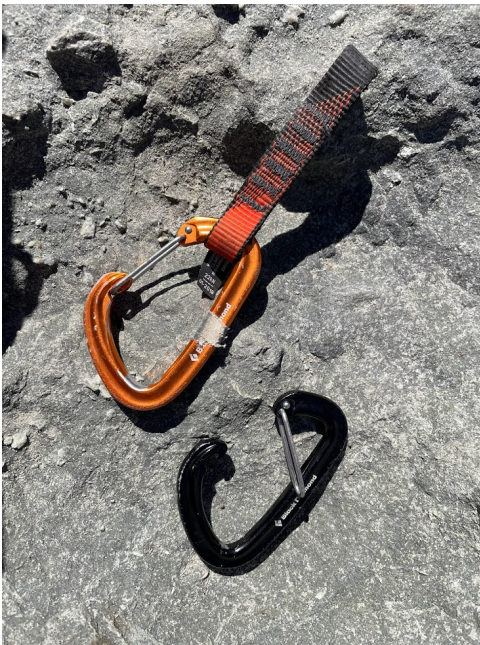


Diagram of the scene at Mickey's Beach. When a climber fell near the second bolt, the quickdraw detached from the bolt and the climber and belayer both fell to the ground.



The broken quickdraw from the Mickey's Beach incident. The wire gate has been fixed in the open position, indicating that it was loaded while not engaged with the gate notch.

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