

Outdoor Safety

Accident Analysis and Rescue Reports

The April 27, 2008 - Rescue of an injured climber from the Redgarden Wall

On the afternoon of April 27, 2008, [Boulder County dispatch](#) notified RMRG of an injured climber in need of assistance on [Redgarden Wall](#) in [Eldorado Canyon State Park](#) ("Eldo"). The ensuing rescue took four and a half hours, involved dozens of rescuers from numerous agencies, and multiple discrete operations (including vertical-, scree-, and Tyrolean-style evacuations).

Events Leading to the Accident Two experienced climbers were attempting to climb the first pitch of the [Doub-Griffith route](#), a difficult technical climb that starts from a small ledge, 150 feet above the base of Redgarden Wall. As the leader was climbing he inadvertently pulled a large, table-sized flake free from the wall. Both he and the flake fell. The large rock landed on the belayer who was sitting on the ledge below. Using an auto-locking belay device (Cinch) the belayer stopped the leader's fall. Both the leader and the belayer sustained injuries. Although the leader was able to get to the ground and walk out on his own, the belayer was incapacitated by his injuries.

Initial response Absent a street address, initial dispatch information rarely pinpoints the exact location of an accident scene. At the time rescuers arrived in the park we knew only that an accident had occurred on Redgarden Wall, a large cliff. Since we did not have a name of a particular climbing route or any more specific information on the location of the injured party, we initiated a search. Some rescuers went up along the west face of Redgarden Wall; other rescuers went toward the East Slabs descent route; still other rescuers went to the Fowler Trail with binoculars to try to locate signs of the accident scene. Within about 10 minutes we established that the injured party was still on the cliff, about 150 feet above the base and near the start of the [Doub-Griffith rock climbing route](#).

Vertical Evacuation For many rescues it is obvious how to best access the patient.

However, for a patient located in the middle of a cliff, the best access route might be from above, below, or traversing from the same elevation. It may be fastest to send medical personnel with light loads up from the ground while other rescuers carry the heavier evacuation gear (litter, [full-body vacuum splint](#), 400-1600 feet of rope, anchor and brake equipment, additional oxygen, etc.) around to an easier access route from the top (potentially via the East Slabs descent route). We are quite familiar with using both approaches on various portions of Redgarden Wall. However, the Redgarden Wall is a big formation and small changes in the location of the injured party can drastically effect rescue access and the evacuation route. Therefore, we generally investigate and fix lines for all options until the best solution can be determined.



[Rescuers loading patient into litter before vertical evacuation](#)
[click to enlarge](#)

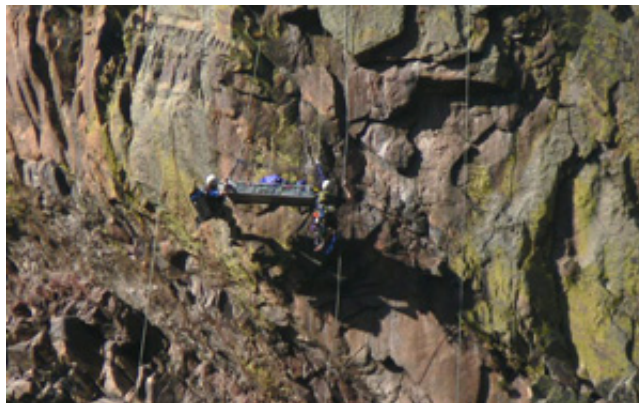
In this case, the first RMRG rescuer was able to access the patient from below by rope ascending 150 feet on a bystander climber's fixed line. The rescuer quickly assessed the patient's injuries, provided first aid, and established that it was possible to build a rescue anchor near his location. Rescuer observers from various perspectives collaboratively decided that it would be fastest to have additional rescuers haul evacuation gear up to the patient from below.

In just over an hour from the time RMRG was notified, rescuers had driven to the park, organized the required rescue gear, located the accident at the start of Doub-Griffith, hiked to the base of the climb, and ascended 150-feet of fixed rope to reach the patient.

Ultimately RMRG had five personnel on the small (3 x 4-foot) ledge: a paramedic to provide continuous

medical care and four rescuers to prepare for a vertical evacuation.

The evacuation required building a mid-wall anchor appropriate for rescue use. Although standard rock protection equipment was used, rescue anchors undergo significantly higher working loads and different loading characteristics than standard climbing anchors. The anchor was set up well above the ledge so that a brakeman could manage the ropes and braking system while hanging from the anchor, thereby optimizing the limited space on the ledge. In the meantime, all the gear required to "package" the patient for his transport down the cliff face was either hauled up to the ledge or carried on the backs of rescuers as they ascended the fixed ropes.



[Vertical lowering of patient in litter](#)
[click to enlarge](#)

A safe [vertical evacuation](#) is gear- and personnel-intensive. In this case the anchor was more complicated than usual. Non-RMRG bystander climbers provided invaluable help on and above the patient's ledge.

When everything was prepared, rescuers loaded the patient into the litter. The loading process is critical for patient care, and is therefore done carefully and methodically. Moving a patient without aggravating broken limbs or spinal injuries is difficult on flat ground, and much more difficult on a 3-foot wide ledge.

After the patient was safely in the litter, rescuers secured him for the ride down. The loading started just over two hours after rescuers reached the scene, and the vertical litter lowering was completed in a couple of minutes.

Scree Evacuation While the rescuers on the cliff prepared for and completed the vertical evacuation, a second team of rescuers prepared to transition the patient to the subsequent [scree evacuation](#). The scree evacuation is a standard rescue technique and is the safest and fastest way to move a litter-borne patient from the base of Redgarden Wall down to South Boulder Creek. (See [FAQ2](#) and [FAQ3](#) on our [Operational FAQ page](#) for more information on this evacuation technique.) The fall-line path down the gully below Redgarden Wall requires three or more pitches of lowering on a 200-foot rope, and reaches the [Streamside Trail](#) roughly a quarter mile upstream of the footbridge at the [Whale's Tail](#).

Approximately ten RMRG rescuers and ten personnel from other agencies were in position at the base of Redgarden Wall below the accident site. Some of these rescuers worked in support roles for the mid-wall activities, managing ropes and gear from the ground. Others prepared the scree evacuation route. The entire route was scouted for potential hazards, and multiple belay (lowering) stations were pre-set. Additional rescuers were in position down-slope anticipating the possibility of relieving litter bearers during the scree evacuation.



[Scree lowering patient in litter \(orange, middle\)](#)
[click to enlarge](#)

A litter team of six rescuers received the patient from the vertical evacuation, and immediately began transitioning the litter rigging into a scree-evacuation configuration. These adjustments must be made because the litter-borne patient is kept horizontal throughout the vertical evacuation, but then is tilted head-up/feet-down for the scree evacuation. An RMRG member who is also an emergency-room physician was waiting at the base of the cliff and provided additional and nearly-continuous medical care throughout the scree evacuation.

In some circumstances scree evacuations go quickly. However, because of the significant and unavoidable rock-fall hazards along and below the Redgarden Wall, scree evacuations in this area proceed cautiously. During this particular scree evacuation at least two bowling ball-sized rocks were inadvertently knocked loose and rolled downhill, one ultimately reaching the creek. This is a dangerous but inescapable aspect of evacuations from the base of Redgarden Wall.

Tyrolean traverse While rescuers worked on the ledge and prepared for the scree evacuation,

another team of rescuers built a Tyrolean ("Tyrol") traverse system to lift the patient across South Boulder Creek. RMRG chose to use the Tyrolean crossing for several reasons. Because the creek was high, litter bearers wading with the litter was not an option. That left a choice between carrying the patient along the [Streamside Trail](#) to the footbridge, or using the Tyrol. In most cases when RMRG evacuates a litter-borne patient from the western portion of the Redgarden Wall, the Tyrol is significantly faster, safer, and more comfortable for the patient. For more on this, please see [FAQ6](#) on our [Operational FAQ](#) page.



[Lifting litter-borne patient across the creek with a wire Tyrolean traverse - click to enlarge](#)

Upon reaching the creek, the patient was transferred to the Tyrol and quickly transported across to the road, arriving at the ambulance about 45 minutes after the scree evacuation had begun. The ambulance transported the patient to the [Rocky Mountain Fire Authority](#) (RMFA) station on Eldorado Springs Drive where it met an Air Life helicopter ambulance.

Conclusions Loose rock is a hazard in most climbing areas, even on routes that are well established. Weather, seasonal and daily freeze-thaw cycles erode rock and loosen holds. Inspecting and/or gently testing suspect holds before pulling forcefully on them reduces the chance of holds breaking loose and possible subsequent falls. In this case, previous climbers had warned of loose rock on a local climbing web forum ([MountainProject.com](#)) and had suggested its removal.

Despite painful injuries, the injured belayer-climber stopped the leader's fall, and successfully lowered the leader back to the belayer's ledge. The auto-locking feature of the belay device probably assisted in stopping the leader's fall. Prudent climbing leaders will have the equipment (prusik cords) and skills to escape from hanging on a taut rope in the event the belayer is unable to lower the leader due to belayer incapacitation or insufficient remaining rope. Additionally, wearing a helmet is a prudent habit and can reduce climbers' chances of injury from falling rocks, and from injuries due to impacting the wall during a fall.

RMRG would like to thank all those who assisted in this rescue. This mission was a great example of many individuals and agencies coming together to assist an injured climber. In addition to 30+ RMRG members, visitors from three other mountain rescue groups (in Boulder for joint training with RMRG), personnel from Rocky Mountain Fire Authority, Boulder County Sheriff's Office, Boulder Emergency Squad (swiftwater support), the Red Cross (logistical support), Colorado State Parks, bystander climbers, and Air Life all assisted in this rescue. As with all of our operations, we always learn from our experiences and strive to make each future rescue more efficient and effective than the last. If we can clarify any further questions please [contact us](#).