

Easy Shell Repair
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Turtle Rescue of New Jersey
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Author note: The focus of this article is the physical repair of shell fractures. Often, the shell fracture is the least of the turtle's problems, and rehabilitators should not get caught up in the "drama" of shell repair. It is equally important to understand wound management, check that airways are clear, control bleeding, address shock, stabilize body temperature, provide fluids, and relieve stress.

Repair of certain chelonian shell fractures can be performed without screws, wires, drilling or patches. This technique does not damage the shell in any way, and allows easy monitoring and cleaning of the fracture site. The process is quick and minimally stressful for the turtle.

The authors have used this procedure successfully on a number of species, including snapping turtles (*Chelydra serpentina*), painted turtles (*Chrysemys picta*), red-eared sliders (*Trachemys scripta elegans*), Eastern box turtles (*Terrapene carolina carolina*), and diamondback terrapins (*Malaclemys terrapin*).



Figure 1.

The materials are inexpensive and can be found in any hardware or electronics store (Figure 1):

- Any instant glue (gel is preferred since it doesn't drip), such as Instant Krazy Glue® Gel (Elmer's Products, Inc., Columbus, OH)
- 2 Ton® Clear Epoxy (ITW Devcon, Danvers, MA)
- Cable tie gun
- Cable tie mounts
- Cable ties

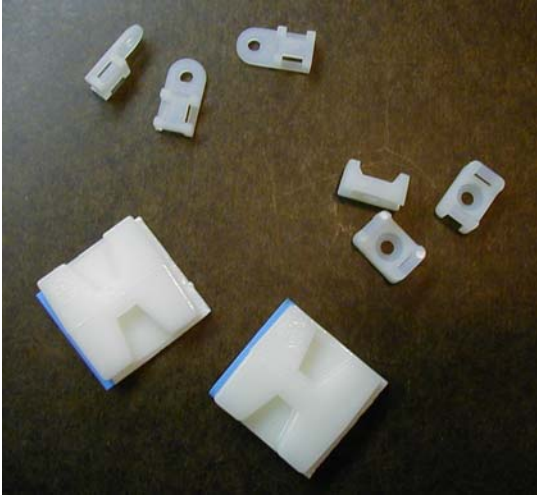


Figure 2.

The tie mounts and the cable ties come in a wide variety of sizes to fit most fracture sites (Figure 2).

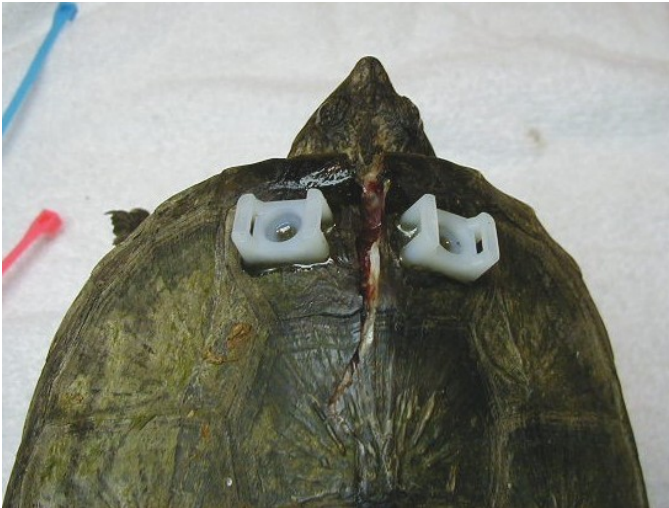


Figure 3.

The fracture on this snapping turtle's (*Chelydra serpentina*) carapace was cleaned and the cable tie mounts positioned with superglue (Figure 3). After positioning, the mounts are covered with waterproof 2 Ton® Epoxy and left to set for 24 hours.

During this 24 hour period, the turtle can receive fluid therapy (if necessary), and be brought up to optimum body temperature. This is an important step in stabilizing the turtle and reducing stress.

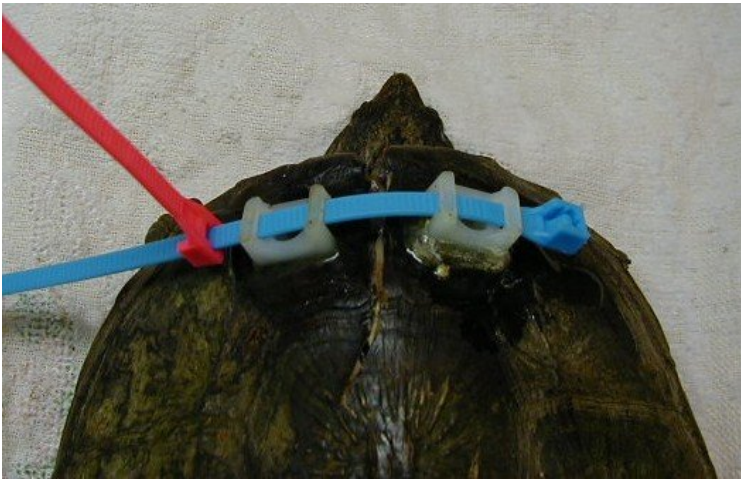


Figure 4.

After the epoxy is dry, the first cable tie (blue) is inserted through the tie mounts. The second cable tie (red) is then slipped over the end of the first (Figure 4).



Figure 5.

The end of the blue cable tie is placed in the cable tie gun. The trigger is slowly pressed to tighten the red cable tie against the tie mount (Figure 5).

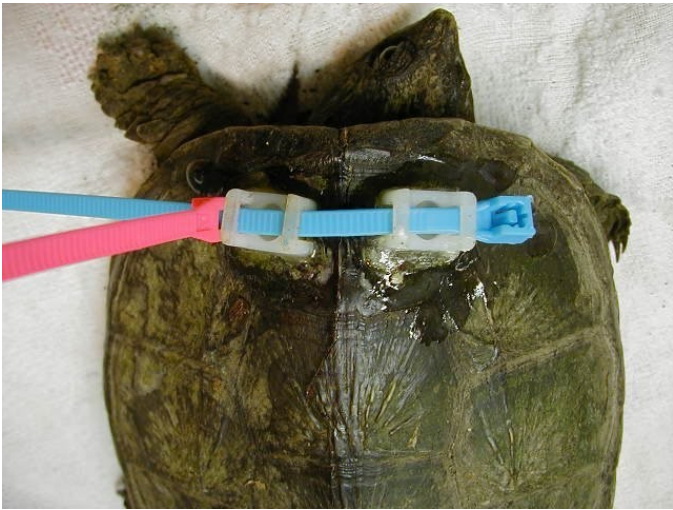


Figure 6.

The cable tie gun exerts a great deal of force and closes the fracture completely (Figure 6).



Figure 7.

After the cable tie is tightened, the long tails are cut off with scissors or wire cutters (Figure 7). Since the fracture is not covered with a patch, any problem is easily seen and treated.



Figure 8.

When healing is complete, the mounts are simply popped off with a flat-edged tool such as a small metal spatula or knife (Figure 8). In this case, healing took four months. The turtle was released with no complications.

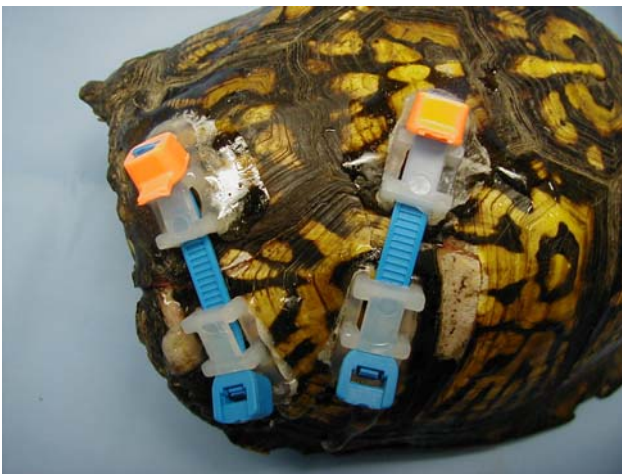


Figure 9.

If the fracture is long or oddly shaped, more than one set of cable ties can be used as shown on this Eastern box turtle (*Terrapene carolina carolina*) (Figure 9).

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