Polydactyly in the Southwest: art or anatomy—a photo essay

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Abstract Rock art in the Four Corners area often includes pictures of hands and feet, which may be representational or symbolic. There is correlation between actual metatarsal bones and carvings of polydactyl feet. No duplicated hand bones have been found, but we postulate petroglyphs of polydactyl hands are a reflection of a real congenital difference.

Keywords Polydactyly · Hand · Native American

Photo Essay

From approximately 600 C.E. to 1280 C.E., a large Native American civilization thrived in the Four Corners area, which included parts of current day Utah, Colorado, Arizona, and New Mexico (Fig. 1). As a group, they are called Ancestral Puebloans, previously referred to as Anasazi. They lived in a highly structured society with a population numbering over 50,000, with 30,000 in the Mesa Verde Region alone [7]. Their complex cities contained multistory buildings with over 600 rooms (Fig. 2), and they traded up to 250 miles away. They never developed a written language, and communicated

mainly through rock art. Rock art is applied tradition and knowledge [5].

Ancient rock images of hands and feet appear throughout the Southwest, but interpretation of the art of the Ancestral Puebloans is difficult since they did not have a written language. Petroglyphs (carvings) and pictographs (paintings) may be symbolic or representational of actual findings or events, or be a mixture of both.

Petroglyphs of polydactyly of the feet are commonly seen. Six-toed feet crowd Newspaper Rock in Utah, thought to be a communication way station for travelers (Figs. 3, 4, 5 and 6). They are also found in Chaco Canyon, NM, one of the largest Ancestral Puebloan sites (Fig. 7), the Mogollon Rim, AZ (Fig. 8), and in many other places throughout the Southwest.

At Pueblo Bonito in Chaco Canyon, bifid metatarsals have been found in burial remains near petroglyphs showing duplicated toes, and offer evidence that these petroglyphs were a factual representation of a congenital difference [2]. Bifid metatarsals have also been identified at Sand Canyon in southwestern Colorado (Kuckelman, personal communication). Photographs of these bones may not be reproduced while they wait on interment by request of the descendant Native Americans.

Petroglyphs of duplicated fingers are unusual. This is surprising considering the relatively high incidence of polydactyly in contemporary Native American populations. The modern incidence of finger and toe duplication is approximately 2.4 in 1,000, with hands preferentially affected. Thumb duplication is more common in Native American populations (0.25/1,000) than it is in Afro-Americans (0.08/1,000) or Caucasians (0.08/1,000) [3].

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Fig. 1 Ancestral Puebloan Spheres

While hiking the Red Tank Draw in Sedona, Arizona, we were surprised to discover a petroglyph of a hand with six fingers (Figs. 9 and 10). Other six-fingered hand petroglyphs are at Three Rivers Monument, NM (Figs. 11 and 12), Doolittle Cave, NM (Fig. 13), and Lewis Canyon, TX (Fig. 14) (personal communications).

Fig. 2 Pueblo Bonito

Fig. 3 Newspaper Rock, Utah

Fig. 4 Newspaper Rock, Utah

Fig. 5 Newspaper Rock, Utah

Fig. 6 Newspaper Rock, Utah

If petroglyphs showing foot polydactyly correlate with real findings in the remains of Ancestral

Fig. 7 Chaco Canyon, NM

Fig. 8 Mogollon Rim, AZ. Courtesy of R. Coleman

Puebloans, it is probable that the hand petroglyphs are accurate as well. To date, no hand remains with extra digits have been found (Kuckelman, personal communication). Osteoarchaeologists think that the smaller hand bones were more easily lost or scattered by rodents and pothunters [1].

One can speculate if these individuals might have had a special role in their society. A burial of an infant with pedal polydactyly at Tapia del Cerrito in Arizona showed

Fig. 9 Red Tank Draw, AZ

Fig. 10 Red Tank Draw, AZ

indications of importance [4]. The majority of burials at this site are under room blocks or in unused rooms. Few burials contain artifacts of any value. Positioning can also be a significant. This child was buried in the central plaza in an unusual clay-lined grave, faced northeast, and was accompanied by a type of pot rare in child burials. This child had special status, but the relationship to its polydactyly is unclear. There is also a report of a high status Fremont burial of a male with polydactyly, and the bifid metatarsals at Chaco were found in a major burial with turquoise and other valuables. There is also speculation linking the Chaco individual to the male found at Sand Canyon, based upon other congenital differences and similar rich burials [6]. A familial relationship would be an important factor in documenting the

Fig. 11 Three Rivers Monument, NM

Fig. 12 Three Rivers Monument, NM

location of émigrés from Chaco after the society collapsed, and it may provide us with an idea about the rulers of the Ancestral Puebloan world.

Modern techniques allow esthetic and functional reconstructions of polydactyly. Polydactyly was present

Fig. 13 Doolittle Cave, NM

Fig. 14 Lewis Canyon, TX

in the Ancient Puebloans, and it is interesting to speculate on the special role that individuals with extra digits may have played in our early American societies.

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