

Comment

Munns, B. and Meldrum, J. (2013) Surface anatomy and subcutaneous adipose tissue features in the Patterson-Gimlin film hominid. *The Relict Hominoid Inquiry* 2:1-21.



I recently had the opportunity to provide a commentary on the above paper. During my review of the article, and a copy of some of the film clips used for the above study, I noticed additional details of the individual in the Patterson-Gimlin film (referred to in the future as the PGF) that had not been mentioned in the paper. These added observations further strengthened the premise made by the two authors that the individual seen in the PGF is an actual hominid, and not a human in a costume. I am providing those observations in this paper.

The film that I was provided is not a direct copy of the original, but was made from a relatively early generation copy of that film. The copy had been image stabilized using a computer to allow for better visualization of the ambulation of the subject, without the camera motion that had been introduced by the cameraman (Roger Patterson) running and filming at the same time. It had also been recorded in slow motion to allow for better assessment of the images. To my knowledge, there was no image revision, or “photoshopping” of the film performed, which would have invalidated my observations.

As a brief personal background, I am board certified as a Plastic Surgeon by the American Board of Medical Specialties (ABMS). I am a member of the American Society of Plastic

Surgeons (ASPS) and the American Society for Aesthetic Plastic Surgery (ASAPS), a subset of the ASPS, composed of its members that specialize in cosmetic surgery. I have a Medical Doctorate and am a Fellow of the American College of Surgeons (FACS). I have had an interest in the science of cryptozoology since my youth.

As was documented in the Munns/Meldrum paper (subsequently referred to as the MMP), the filmed individual appeared to be “an aging and slightly overweight female.” This impression was based on the observation of the various skin creases and folds seen on the individual in the above film, along with the obvious presence of her large pendulous breasts, indicative of the subject’s sex.

In point of fact, all bodies age. With aging comes excess fat deposition in certain genetically determined areas, and loss of fat in others. An increase in skin folding can be observed in areas where loss of the underlying adipose tissue (fat) had occurred. It is not unreasonable to assume that the Bigfoot goes through a similar aging process to that experienced by humans. In the case of “Patty”, the nick-name applied to the hominid in the PGF, it is very likely that she is a mature adult female. With no information about actual life spans for the presumed species, we can probably safely assume that they would survive for at least 35 to 40 years in the wild, since that is the average for gorillas, orangutans, and chimpanzees, with body mass bracketing humans. Of interest, all

of the apes tend to live about a decade longer in captivity (Jenny, a western lowland gorilla, died at age 55 in the Dallas Zoo). Based on the skin folds and excess adipose tissue seen on her body, it is very likely that “Patty” has at least reached middle age, and almost certainly has had one or more offspring, based on the size and shape of her breasts.

In the mature, fertile human female, it is very common for the breasts to undergo a significant change in shape as a result of child-bearing. Prior to becoming pregnant, the woman’s breasts may be located in a relatively high position on her chest, and be prominent anteriorly. With pregnancy, the change in hormonal levels results in the glandular (milk-producing) tissue in the breast increasing its size, with the degree dictated by that individual’s genetics. If the woman then opts to breast feed her infant following delivery, the glandular size increase will persist as long as that process is ongoing.

Once nursing has been discontinued, the glandular tissue will reduce in size, with the breast becoming smaller. The skin envelope around the breast tissue will attempt to contract back to its original size and shape, but if the increase in volume during (and after) pregnancy was significant, and if nursing was continued for a prolonged period of time (several months), the overlying skin may have actually grown to the larger size. As such, it will not be able to contract back to the pre-pregnancy dimensions. In appearance, it becomes more flattened and longer, with a resultant “drooping” characteristic. Multiple pregnancies only serve to make this condition more prevalent.

In my observation of the PGF, “Patty’s” breast size and shape are, in my opinion, more consistent with those of a multiparous female (one that has had multiple pregnancies), rather than an overweight one. With obesity the breast tends to be fuller throughout its shape, to include the upper pole. With a post-pregnancy breast, the upper pole tends to be

flatter, with the majority of the fullness located in the inferior quadrants.

It has been mentioned that “Patty” may have been adding “fat stores” in preparation for the Winter (the PGF was shot in October). That is certainly a reasonable possibility. The significant skin folds seen suggest that the weight gain is either a chronic condition, or occurs frequently enough (i.e. during yearly cycles and/or pregnancies) to have caused the skin to grow to accommodate it, rather than just stretch. Obviously, the same changes that occur to the breasts can also occur to the abdominal and flank areas.

In keeping with the premise that “Patty” may have been pregnant one or more times in her life, the noted truncal skin changes could also be caused by that process. These would be effected by the enlargement caused by the growing fetus, the additional weight gain by the mother, and the duration of the actual pregnancy. While the gestation period in the proposed hominid is unknown, using data from similar species may be helpful to provide an estimate of the duration, since the amount of time spent in the larger size impacts on whether the skin can retract adequately.

The human gestation period averages around 266 days or 38 weeks (9 months). Gorillas and orangutans average between 36 and 38 weeks. Chimpanzees average 38 weeks. Given that “Patty” is larger than the average human, it is not unreasonable to assume that her gestation may be longer than a human or known ape. The largest land animal, the elephant, has a gestation period of 645 days or 23 months – almost two years. This being stated, however, members of the bear family, which are significantly larger physically than humans, have somewhat shorter gestation periods, with the black bear at 7 months, the grizzly at 7.5 – 8 months, and the polar bear between 8.5 and 9.5 months. Apparently body mass and relative brain mass each influence gestation length.

Based on the above data, it is likely that the

unknown hominid probably would be pregnant for approximately 9 months, and then breast feed for several years afterwards until her offspring was able to consume more solid food (chimpanzees and gorillas wean at about 6 years). This information would support the appearance of “Patty’s” chest and torso. In the challenging lifestyle imposed by living in the wild, it is unlikely that her skin folds are solely due to obesity. In reviewing the PGF, “Patty” appears to be “solidly built,” but not markedly obese.

The reason for the above emphasis on pregnancy is because the body alterations caused by that process do not present in the same way as those seen with simple weight gain and loss. These changes, while well understood by a cosmetic plastic surgeon, since a significant amount of our work deals with them, would not necessarily be known to a costume designer.

The MMP covered five distinct skin folds found on “Patty” and in humans, so I will tend to limit my discussion of those, since they have been very thoroughly covered. I did, as stated above, find additional areas that are consistent with a living individual and not likely to be seen in a costumed person. I will start at her head, and continue inferiorly in my description of the findings.

There is limited detail of “Patty’s” face due to the grain from the film, combined with the short period of time that she is looking back at the camera. That being stated, she does demonstrate a rather prominent anterior, inferior neck fold. It is best seen in the pictures that show her turning to look back at the photographer. There is a clear fold seen, with shadowing underneath that is consistent with a protruding area. It does not, however, appear to be the classic “double chin,” that is seen on overweight humans, but may actually represent a small air sac, similar to those found on some of the great apes, with the orangutan being the most gifted with the organ. The sac is used for an alternative

method of vocal communication.

A human “double chin” results from excess adipose tissue deposits in the submental (anterior neck) region, combined with laxity of the platysma, and the other “shelf muscles” under the chin. It arises from a skin attachment (submental crease) just inferior and posterior to the point of the chin (mentum), and extends down to the base of the neck. It may have a single, or multiple folds. While it may rest on the chest, if large enough, it will always arise from the undersurface of the jaw line.

In the case of the anterior bulge seen in the PGF, it appears to originate from the base of the neck, although this cannot be clearly seen. There are, however, frames as she turns her head to look at the camera, and then looks away, where her chin and neck angle can be seen, indicating that the bulge is not originating from the submental crease. It clearly rests on her upper chest area, and is distinct from her breast tissues.

The right upper arm demonstrates an interesting finding. As she walks away, and swings her right arm backwards, the triceps muscle is fired to help accomplish the maneuver. The long and lateral heads of the triceps brachii become more prominent with the back-swing, and less prominent with the swing forwards. The two muscle bellies form a chevron or inverted V-shape seen on the posterior arm. The synchronized increase and decrease in size of the muscle, as seen on the film, would be particularly difficult to replicate in a costume. While “muscle suits” may have padding designed to replicate the triceps, the padding is largely static, and does not swell and subside as does real muscle tissue when contracting and relaxing.

Posterior from the shoulder, her scapula can be seen “winging” or becoming more prominent with the right arm swinging forwards, combined with the head turning back, away from the camera. This is a natural occurrence for the body, since the arm is

attached to the triangular-shaped scapula, which is stabilized by several muscles. There is no bone-to-bone contact of the scapula/humerus unit with the rest of the body skeleton, with the exception of a small anterior pivot point provided by the clavicle. This allows for the significant mobility exhibited by the shoulder, and the protrusion of the medial border (“winging”) of the scapula. As with the above described triceps changes, this would be very difficult to replicate in a costume, and would not be a physical characteristic commonly known outside of the medical community.

Continuing inferiorly, her chest and back can be addressed. “Patty” has large, pendulous breasts that respond to gravitational stresses by swinging from side to side, and elongating and shortening in response to her gait. She has an extension of the right lateral breast fold that extends around to her back. As can be seen in the PGF, the fold runs in a smooth curve from the mid-right back to the anterior axillary line (a vertical line drawn from the front of the axillary fold inferiorly). It then runs under the breast, making up the inframammary crease. The sharp angle caused by the transition from the breast to the lateral skin fold is due to the anchoring of the skin to the underlying rib cage by the ligaments that are responsible for the inframammary crease. There is a smaller fold seen just superior to the extension of the breast fold, which arises from the axilla (arm pit). Both of these were documented in the MMP as the “Mid-Back Drapery folds”.

“Patty” has a third fold, parallel to the breast fold, but more inferior. It is seen at her approximate waist level posteriorly, but runs more inferiorly towards the center of the abdomen, making the turn at an anatomic landmark consistent with her ASIS (anterior superior iliac spine), a bony prominence we all have at the top front of our pelvic girdle. The skin is adherent to that structure by a strong ligament. A second structure, the

inguinal ligament, runs from the ASIS to the pubis, with the skin attached along its length. The anterior fold in the film conforms to this ligamentous attachment.

Continuing to the posterior aspect of the fold, it merits comment, due to the fact that the human body can develop these “festoons” of excess skin and fat in a bilateral manner, with the posterior spine serving as a division between the two sides. Even in the most obese individual, there is minimal fatty deposition found in the midline of the back. The skin is attached to the spinal column by a series of ligaments that stabilize it from motion in a superior and inferior direction. The excess skin folds hang from that line similar to the attachment of a hammock. In looking at the pictures of the model in the costume used for the MMP, the costume folds cross the midline of the back in several views, violating the above anatomic rule.

“Patty’s” buttocks area has a classic inferolateral sag, with the excess skin draping below the musculature of the buttocks. The suspensory ligament that provides us with the buttock crease, the ligament of Luschka, prevents the skin from draping in a single sheet. The ligaments of Jacque, however, tend to lose elasticity with age, with the resultant tendency of the buttock to sag to the side. The fold in this area was commented on in the MMP, but the fact that it is present in humans merits restating, since the “buttock lift” is a relatively common operation performed by those of us in the plastic surgery field, and is designed to address this problem.

The folds in the upper thigh/hip area were well covered by the authors in the MMP. There was, however, another finding on the lateral thigh that was not mentioned. It is worth emphasizing for two reasons: 1) it can be clearly seen in the film footage; and 2) the fact that it is caused by a suspensory ligament that is probably only understood by a very select group of people, i.e., plastic surgeons. I, as one of that group, am aware of its existence

since it has to be surgically released when a lateral thigh lift is performed. In my review of two separate anatomy texts, neither documented the presence of the ligament. Its main function is to support the lateral leg skin. When the skin becomes stretched out due to fat accumulation, a depression is seen in the upper 1/3 of the thigh, inferior to the creases that the MMP researched. The ligament in humans is relatively large, measuring approximately 4 inches long, and running across the axis of the leg. In the PGF subject, it may be a bit larger, as documented by the shadowing from the depression.

Not quite as noticeable as the above suspensory ligament, but still visible in the PGF, is the axial depression in the mid-lateral thigh caused by the skin attachment to the underlying TFL (tensor fascia lata), a band that runs down the middle of the vastus lateralis, one of the thigh muscles. As with the triceps, it becomes more and less visible with the synchronized firing and relaxing of the muscle during the action of striding.

The next observation is of the popliteal fossa, or the hollow area behind the knee. In the PGF, it is seen on both legs, but probably more evident on the left. The hollow is caused by the tendons from the two posterior thigh muscles, the biceps femoris and the semitendinosus. As they cross the back of the knee, a tenting of the skin occurs laterally, with the central, unsupported area of the skin sagging inward. It is most prominent with the knee flexed and less apparent with the leg fully extended. In an individual that is walking, it appears and disappears, as seen in the PGF. As with the triceps and scapula, the ability to have an area of a costume change with use would be extremely difficult to replicate. In this case, however, it could be impossible. Even with modern stretch cloth (such as Lycra® spandex), not generally available in 1967, the sulcus (depression) seen with the knee flexed in a person wearing a fitted pair of pants is missing. The cloth is

stretched across the two tendons, similar to a drum. The only way to reproduce the depression would be to glue the cloth to the posterior aspect of the individual's knee. While this would produce the sulcus, it would then be present in all positions, and not appearing and disappearing with flexion and extension of the knee – clearly a daunting task for a costumer.

My last areas of observation are of the posterior lower leg and ankle. The two heads of the gastrocnemius muscle (medial and lateral) can be seen in the right leg. In spite of the “grainy” characteristic of the film, the contraction and relaxation of the heads of the gastrocnemius are observable, comparable to that seen in the triceps described above. The tendon of this muscle is of further interest. The Achilles' tendon runs to its attachment on the calcaneus (heel bone). The tendon is seen with a depression anterior to it, correlated with the elongated heel and distance between the tendon and the tibia, as with the posterior knee, the creation of a depression with a costume is essentially impossible.

Additionally, the end of the pant leg made from non-stretch material needs to be made wider to accommodate for the foot being passed through. This is clearly seen in the costume used in the MMP. There is no such excess of material seen in the PGF, with the gastrocnemius tapering into the ankle, and then widening out to the foot.

In the DISCUSSION AND CONCLUSION section of the MMP, the authors state that the costumes of the era (1967) were either intended for comical theatrics with little attention to realism, or if realism was needed, then made to be large, powerful and threatening. I would mention an exception to this statement, and cite the movie, *Planet of the Apes*. This ambitious movie venture is an ideal reference to look at when discussing what would be considered the state of the art costuming of the era. It was shot during the Spring and Summer of 1967 and released to

the theaters in 1968 (the PGF was shot in October of 1967). It was a high budget film for its day, with costs running over \$5,000,000. It had one of the premier Hollywood make-up artists, John Chambers, as its head costumer. It also starred Charlton Heston, an "A" list actor in Hollywood at the time. It can be safely assumed that every effort was made to produce as realistic an ape for the movie as was possible. Point of fact, the picture won an Honorary Award for outstanding make-up achievement, during the Academy Awards for that year.

In my reviewing of the ape costumes in the movie, three points became apparent. The first, and most obvious, with one very limited exception, was that the apes all wore clothes. Only their faces and hands were typically exposed. The second observation, and this is actually espoused by John Chambers, himself, in a commentary about the film, was that the facial prosthetics used to convert the actors to apes had significant limitations, particularly with providing the actor or actress with an ability to form facial expressions. My third observation was that there was only one scene in the movie where an arm of a chimpanzee was shown for enough time to evaluate it. When seen for the brief time the character is the center of attention, his left arm is seen to flex at the elbow, with a very non-anatomical fold occurring across the costume material. Two additional, non-anatomic folds are seen in the lateral upper arm, probably caused by the sleeve twisting as the arm was flexed. On a close-up of the right shoulder, a seam can be seen where the costume sleeve was sewn to the trunk. It is only partially hidden by a vest being worn by the character.

The take home point of the above reference to the movie, *Planet of the Apes*, is that one of the best costume artists in Hollywood, with a huge budget, was unable to make a realistic costume arm on a character. Consider how much more difficult it would have been to

make a complete body suit, and have it match, anatomically, on all of the points documented above, by me, and by the authors of the MMP. The fact that the individual in the PGF is a stocky, probably older female, which is, in my opinion, the antithesis of the classic hulking brute that would most commonly have been used in a "horror movie" genre, combined with the significant amount of money and time it would have taken to create such a costume, even if it were possible, makes the likelihood of the individual in the film being a human in a "monkey suit" virtually nil.

In conclusion, after a thorough review of the copy of the Patterson-Gimlin film provided to me, it is my professional opinion that it represents a live hominid and not a human in a costume. As noted above, there are multiple details of areas on the filmed individual's body that correspond to those found in a human. Also as stated above, the replication of some of these anatomic landmarks would be difficult or impossible to accomplish in a costume. Additionally, it would take a detailed knowledge of human anatomy to even be aware of some of these anatomical features, let alone possess the technical skills to incorporate them into a convincing costume. That information is only known to a very select percentage of the population, of which I happen to belong.

While it may be difficult for one to accept that in our modern age there can be a large, undiscovered hominid living in our forests, the facts have to be faced. In the words of Sir Arthur Conan Doyle's famous character, Sherlock Holmes: "When you have eliminated all which is impossible, then whatever remains, however improbable, must be the truth."

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