

The Importance of Hand Appearance as a Patient-Reported Outcome in Hand Surgery

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Summary: Hand appearance is meaningful to patients because hands are an essential part of human interactions, communication, and social integration. Recent literature indicates that hand aesthetics is an important, measurable patient-reported outcome. In hand surgery, several outcome instruments exist that accurately measure functional outcomes, but aesthetics is often overlooked or imprecisely measured. This makes comparison of disease burden and effectiveness of therapies, as they pertain to aesthetics, difficult. This special topic article outlines the aesthetic features of the hand, how literature is evaluating the appearance of the hand in outcomes research, and proposes a novel approach to assessing hand aesthetics. (*Plast Reconstr Surg Glob Open* 2015;3:e552; doi: 10.1097/GOX.0000000000000550; Published online 5 November 2015.)

Hands are prominently visible to both self and the public, and therefore, patients are cognizant of their appearance.¹ Although normal hands go unnoticed, the deformed or diseased hand often draws unwanted attention with psychosocial consequences.^{2,3} Hands have personal significance and are important for human interactions, nonverbal communication, and social integration.^{1,4-6} Furthermore, presumptions of health can be inferred from skin appearance, soft-tissue bulk, and joint alignment.^{4,7,8} For these reasons, patients will have concerns about the appearance of their hands, even when faced with a crippling hand ailment.

Although functionality remains unquestionably the outcome of critical importance in hand surgery, surgeons are beginning to recognize that patients care about hand aesthetics.⁹ This is evident by the use of hand appearance as a patient-reported outcome in observational research.¹⁰⁻¹⁴ Assessing aesthetics can be a powerful method of demonstrating the patients' perspective on surgical interventions.¹⁵⁻¹⁷ For example, Chung et al¹⁶ found that hand appearance is a valued outcome for rheumatoid arthritis patients with severe hand deformity undergoing silicone metacarpophalangeal arthroplasty. In fact, aesthetic consideration was the most important outcomes domain over function.¹⁶

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Understanding the importance of hand appearance to patients requires accurate, reliable assessment methods. Although hand-specific questionnaires exist, many researchers elect to use ad hoc methods to evaluate aesthetics. Having a universal, standardized approach to assessing hand appearance would be ideal to introduce consistency across hand surgery literature and provide guidance to hand surgeons interested in evaluating a patient's

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aesthetic concerns. This remains challenging because a patient’s perception of hand appearance is dependent on personal preference and their hand affliction, rather than specific characteristics related to the disease process or surgical intervention.^{18,19} This special topic article focuses on defining hand aesthetics, its importance in hand surgery, and the need for validated and accurate assessment methods for aesthetic outcomes.

FEATURES AFFECTING HAND APPEARANCE

General hand features including shape, proportions, and landmarks (eg, palmar crease) and typical clinical hand anatomy (eg, joints and digits) contribute to the appearance of a normal hand. The qualities of an aesthetic hand are more subjective. Literature suggests that an aesthetic hand appears youthful, healthy, and has long, but proportionally appropriate, fingers.^{1,4,5,7} The prominence of veins, feminine or masculine features, skin texture, and pigmentation are features of personal preference.^{1,5} Satisfaction, or comfort, with hand appearance is highly individualistic and may depend on age, sex, religion, culture, socioeconomic status, and hand affliction.^{1,4,5} Recognizing the features valued by patients will assist surgeons in providing reconstructive surgery with improved patient satisfaction.

Shape, Proportion, and Length

The shape of the hand often parallels an individual’s body type.¹ A historical classification of hand types was adopted from Kretschmer’s²⁰ body habitus classification. The leptosome–asthenic type has a slender form with long fingers; the athletic type is rough, wide, and balanced; and the pyknic-type has a short, wide dorsum with conically formed fingers.^{1,20} The feature differing these hand types is predominantly finger length. The influence of finger length on appearance is glaring when a digit is traumatically foreshortened (Fig. 1). For this reason, many surgeons advocate distal digit replantation over amputation to conserve hand aesthetics.^{21,22} An aesthetically superior finger to hand length does not exist, but the golden proportion has been suggested as the model dimension.^{1,23} The golden proportion, a mathematical ratio of 2 parts represented by “ $(a + b) / a$ equals a / b equals 1.618,” has been referred to a proportion of beauty and has been applied in facial aesthetics and rhinology (Fig. 2).²⁴

Visual Subunits

Higgins et al²⁵ introduced the concept of hand visual subunits or characteristic regions formed by



Fig. 1. Finger length is a dominant hand feature. Discrepancies in figure length or proportion are easily recognized and result in poor hand aesthetics.

convexities, concavities, or topographical contrasts of the hand. Similarly, Rehim et al²⁶ subdivided the hand into functional aesthetic units (Fig. 3). When visual subunits are disrupted or become indistinct from adjacent subunits, a deformity is perceived. Higgins et al²⁵ emphasized the importance of reestablishing normal variance between visual subunits in posttraumatic hand deformities, particularly after soft-tissue coverage, with procedures such as partial flap elevation, targeted debulking, and redefining topographic regions. Subunits should also be respected when making a surgical incision, as not to not disfigure their natural borders.²⁷

Soft Tissue

The soft tissues of the hand contribute to the topographic variations between visual subunits. The volume and integrity of soft tissues are strong indicators of an individual’s age, health, and body habitus.^{4,7} For example, edema and skin turgor can offer estimation of fluid status, whereas fattiness or cachexia lends insight into nutritional status. Young adult hands are marked by supple, soft tissue and few visible subcutaneous structures.⁴ Veins, tendons, and muscle are more visible on the dorsal surface, as loose areolar tissue anchors the thin skin to the deep fascial layer.^{4,23} Male hands appear more masculine and square because they generally have less

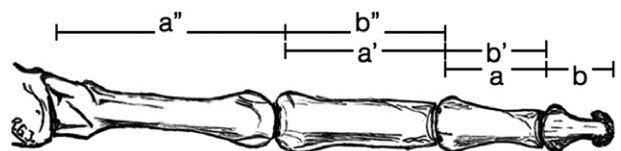


Fig. 2. The golden proportion is a mathematical ratio of 2 parts represented as “ $(a + b) / a$ equals a / b equals approximately 1.618.” Reprinted with permission from Springer. Jakubietz RG, Jakubietz MG, Kloss D, et al. Defining the basic aesthetics of the hand. *Aesth Plast Surg.* 2005;29:546–551.

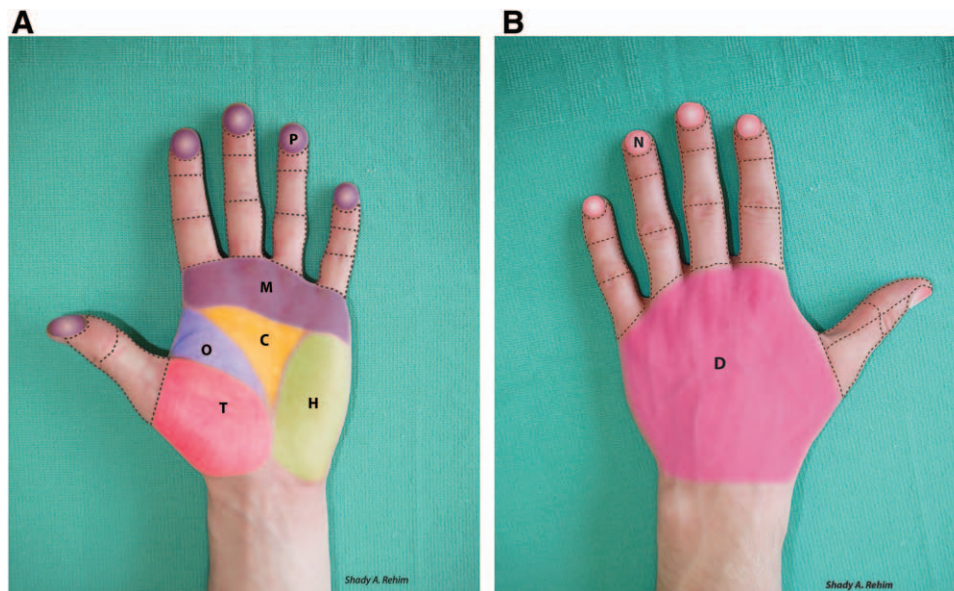


Fig. 3. A, Rehim et al²⁶ described the functional aesthetic subunits of the hand. The volar subunits include the thenar (T), opposition (O), hypothenar (H), central triangular (C), metacarpal (M), and 3 subunits for each digit (except for the thumb, which has 2). The pulps (p) of digits are topographically the most prominent subunit of the hand. B, The dorsal hand contains the dorsum (D) and 3 subunits for each digit (except for the thumb, which has 2). Reprinted with permission from Wolters Kluwer Health, Inc. Rehim SA, Kowalski E, Chung KC. Enhancing aesthetic outcomes of soft-tissue coverage of the hand. *Plast Reconstr Surg.* 2015; 135: 413e–428e.

subcutaneous fat.²⁸ Conversely, feminine hands have more subcutaneous soft tissue, less prominently visible underlying structures, and less hair.²⁸

Skin

Palmar and dorsal skins are aesthetically distinct, as a result of their histological differences and mechanical demands. Palmar skin has a thick dermis and heavily cornified epithelium with papillary ridges that protect against shearing forces.²³ An abundance of vertical fibers tether the thick, fibrous palmar fascia to the dermis, making this skin highly durable and less susceptible to age-related changes (eg, wrinkles).²³ Deep palmar creases allow joint flexion and permit skin folding.⁴ The transition from glabrous to nonglabrous skin occurs at the mid-axial line of each digit. In contrast, dorsal skin is thin and soft and the lack of tethering fibers contributes to its pliability.²³ On the dorsum of the hand, fine wrinkles are apparent at a young age over joints and allow unrestricted flexion.^{4,7}

Hand Aging

Hand appearance is influenced by physiological changes related to aging. Intrinsic aging affects the subcutaneous tissue and is characterized by dermal and fat atrophy; deepening of intermetacarpal spaces; and marked by prominent tendons, bones,

and veins.^{1,29} Extrinsic aging is a result of pathological changes (eg, actinic keratosis) in dermal and epidermal layers and is a consequence of environmental exposures, such as ultraviolet rays.¹ Jakubietz et al⁴ described the chronological changes in aging by making observations on wrinkle pattern, volume loss, visibility of subcutaneous structures, and trophic changes. Dominant wrinkles are the first signs of aging, generally appreciated in the fourth decade. Wrinkle progression is prominent at the wrist crease and over the metacarpophalangeal joints. Around the sixth decade, epidermal thinning, volume loss (particularly thenar and hypothenar eminences), and prominent dorsal veins are more apparent.⁴ As dorsal skin becomes less elastic, finger flexion no longer results in complete emptying of incompetent dorsal veins.⁴ Muscular atrophy, visible tendons, dorsal wrinkles, and hand pathology (eg, osteoarthritic joint deformities and skin lesions) are characteristic of elderly hands.

HAND APPEARANCE AS AN OUTCOME OF INTEREST

Hand aesthetics can be an important factor in determining the morbidity of pathological hand conditions and the effectiveness of interventions. Here, we provide examples of pathological conditions in

which hand appearance has been used as an outcome of interest. Table 1 supplements our discussion by providing examples of publications that have used aesthetics as an outcome.

Degenerative and Inflammatory Joint Disease

Hand features, such as digit length and alignment, can be profoundly affected in degenerative and inflammatory joint diseases. Common osteoarthritic hand deformities include bony enlargement, soft-tissue swelling, Heberden’s nodes, Bouchard’s nodes, and squaring of the hand at the carpometacarpal joint (Fig. 4).³⁹ Hodkinson et al³⁹ found that aesthetic discomfort is a major concern for patients with hand osteoarthritis and is associated with depression, anxiety, and poor health-related quality of life. Hand appearance is also frequently included as an outcome measurement when investigating the surgical management of inflammatory joint diseases. For example, Bogoch et al⁴⁰ showed that hand appearance is a strong motivator for rheumatoid arthritis patients

undergoing metacarpophalangeal joint arthroplasty, and that patients reported greater improvement in appearance than function or pain relief.

Trauma and Burns

Several aesthetic considerations exist when treating traumatic injuries and burns to the hand. Treatment of hand trauma involves aggressive debridement of devitalized tissue, reconstruction of osteotendinous and neurovascular defects, and soft-tissue reconstruction.⁴¹ Although a surgeon’s primary objective is to maximize functional recovery, patients will have concerns about hand disfigurements. Therefore, without sacrificing the structural reconstructive efforts, surgeons should consider the aesthetic outcomes of surgical interventions.

The following case report illustrates how hand appearance can be important to patients with complex traumatic injuries:

A healthy 32-year-old male laborer sustained a metal press injury to his left nondominant hand

Table 1. Examples of Publications That Have Used Aesthetics as an Outcome in Hand Surgery Literature

| Condition | Author | Intervention/Pathology Investigated | Aesthetic Outcome Assessment Tool | Conclusion Regarding Aesthetic Outcome |
|----------------------|------------------------------------|---|---------------------------------------|---|
| Osteoarthritis | Bales et al ³⁰ | Silicone arthroplasty at the proximal interphalangeal joint for osteoarthritis | 5-point Likert scale*—1 question | Neutral response regarding appearance outcome |
| Osteoarthritis | Pritchett and Habryl ³¹ | Thumb basal joint hemiarthroplasty for treatment of trapeziometacarpal osteoarthritis | Buck-Gramcko Score | “...142 of 159 procedures had excellent or good cosmetic appearance” |
| Rheumatoid arthritis | Chung et al ¹⁶ | SMPA vs a nonsurgical cohort of rheumatoid arthritis patients | MHQ | Long-term improvement in appearance following SMPA |
| Trauma | Chen et al ³² | Fingertip replantation without venous anastomosis | None specified | “...all patients were happy with the decision to replant and the aesthetic results” |
| Trauma | Ni et al ³³ | Palmar pivot flap to provide sensate glabrous skin for reconstruction of fingertip and pulp defects | MHQ | Satisfactory aesthetic outcomes in all 21 reconstructions |
| Trauma | Parrett et al ³⁴ | Free flaps (muscle, fasciocutaneous, fascial, and venous flaps) for dorsal hand and wrist coverage | 5-point Likert scale†—4 questions | Aesthetic outcome is dependent on flap choice |
| Burn | Chan et al ³⁵ | Full vs split-thickness skin grafts in pediatric palmar surface burns | VSS† | No statistical difference between comparison groups |
| Congenital anomaly | Singer et al ³⁶ | Polydactyly resection | VAS‡ | Mean satisfaction with aesthetic outcome was 89 (0–100) |
| Congenital anomaly | Goldfarb et al ³⁷ | Surgical reconstruction of complex syndactyly | VAS †—1 question VSS† | A range of aesthetic outcomes was found |
| Congenital anomaly | Goldfarb et al ³⁸ | Cleft reconstruction in patients with central ray deficiency | VAS† 4-point Likert scale—1 question* | “Cleft reconstruction improves hand appearance...” |

*Patient questionnaire.

**Surgeon questionnaire.

‡Number of VAS questions not specified.

MHQ, Michigan Hand Outcomes Questionnaire; SMPA, silicone metacarpophalangeal joint arthroplasty; VAS, Visual Analog Scale; VSS, Vancouver Scar Scale.



Fig. 4. Osteoarthritis causing a deformity of the right ring proximal interphalangeal joint (Bouchard's node).

(Fig. 5). This resulted in a circular, punched-out wound with complete loss of the ring and long finger metacarpophalangeal joints and associated composite structures. Both digits remained vascularly intact, but only the long finger retained partial sensation.

After careful counseling, the patient realized the impact his injury would have on hand functionality. Interestingly, when discussing surgical options to maximize his functional outcome, the patient and his family were equally concerned with aesthetic outcomes. They were apprehensive about the appearance of amputated digits, a cleft hand, skin grafting, and the visibility of surgical incisions.

Surgical reconstruction included a vascularized pedicled transfer of the ring finger proximal interphalangeal joint to reconstitute the metacarpophalangeal joint of the long finger (Fig. 5). Using this “spare-parts” technique, soft tissue from the ring finger was used as coverage for the wound defect. This like-to-like reconstruction of glabrous and nonglabrous skin enhanced the aesthetic result, as other forms of flap reconstruction would undoubtedly have lead to discrepancies in contour, texture, and pigmentation of the palmar and dorsal surfaces. Although the reconstruction required amputation of the insensate ring finger, the long finger was salvaged and a cleft hand was avoided.

When treating traumatic hand injuries, decisions regarding digit reconstruction (vs amputation) and soft-tissue coverage often have the greatest aesthetic implications.⁴¹ Because a deficiency in finger length is easily recognized, distal replantation (performed at centers specializing in replantation) is recommended for patients interested in restoring the length and improving the appearance of an amputated digit.^{32,42} Important aesthetic parameters in reconstructing hand soft tissue include pigmentation,

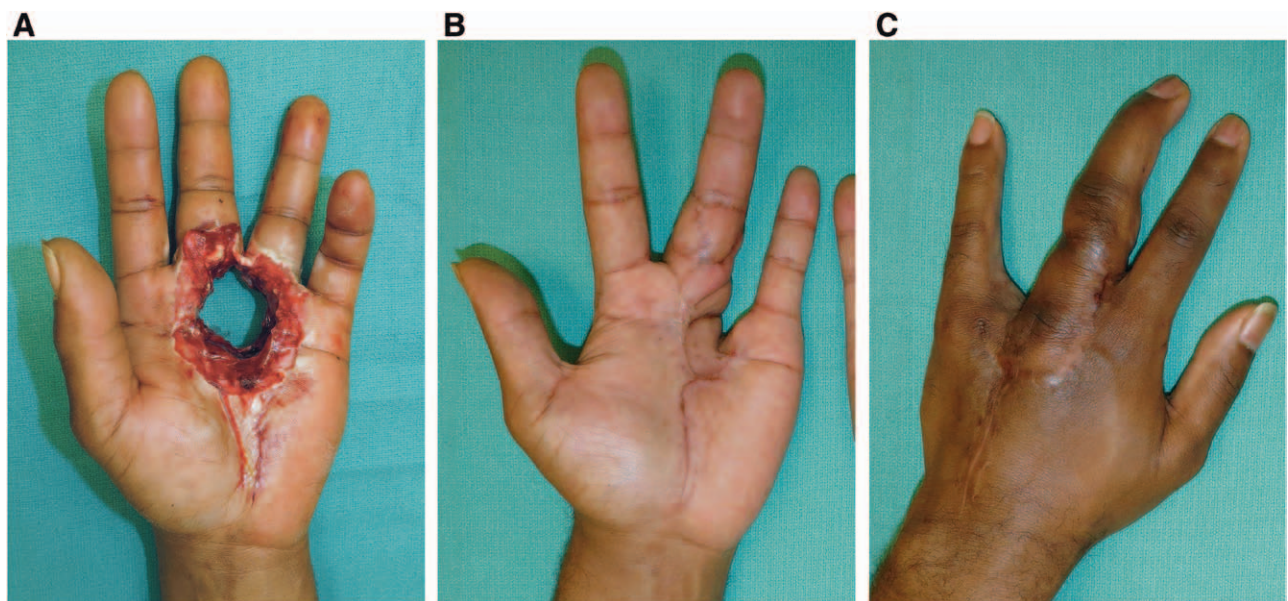


Fig. 5. Traumatic injury with complete loss of the ring and long finger metacarpophalangeal joints (A). Palmar (B) and dorsal (C) views after a vascularized pedicled transfer of the ring finger proximal interphalangeal joint to reconstitute the long finger metacarpophalangeal joint with like-to-like reconstruction of glabrous and nonglabrous skin.

contour, volume, glabrous skin matching, and incision placement.²⁶ Palmar skin is distinct, and thus, soft-tissue coverage is preferably obtained from the hand to optimize functional, sensory, and aesthetic outcomes.⁴¹ When glabrous skin is not available, several soft-tissue reconstructive techniques exist, such as partial toe transplant, pedicled abdominal flaps, cross-finger flap, reverse digital artery flap, reverse dorsal digital island flap, and V-Y advancement flap.^{33,35,43–46}

Hand Tumors

Hand tumors, arising from skin, soft tissue or osseous structures, may present as an unsightly lesion or deforming mass. Skin lesions (eg, actinic keratosis, pyogenic granulomas, and keratoacanthomas), benign soft tissue (eg, lipomas, ganglion cysts, schwannomas, glomus tumors, and neurofibromas), and vascular tumors (eg, hemangiomas) are often amenable to topic treatments, electrocautery, cryotherapy, or simple resection.⁴⁷ These lesions are typically inconsequential to hand appearance, although aesthetic outcomes after management may be of interest depending on lesion size, side effects of nonsurgical treatment (eg, hypopigmentation from sclerotherapy), and location of surgical incisions.

Conversely, malignant lesions, including basal cell carcinoma, squamous cell carcinoma, melanoma, and soft-tissue sarcomas, may require extensive resections with dramatic aesthetic consequences

(Fig. 6).⁴⁸ Sarcomas are aggressive hand tumors, historically treated with radial resection and amputations.⁴⁹ Current literature recommends limb salvage when feasible, as this offers no difference in long-term survival but provides the potential of improved functional and aesthetic outcomes.⁴⁹

Congenital Deformities

Hand appearance as a clinical outcome is relevant in congenital deformities because an abnormal hand may impact a child's psychological, emotional, and social development.^{50,51} For example, aesthetics is often the primary indication for surgical correction of ulnar polydactyly, as this condition is rarely associated with function disabilities (Fig. 7).³⁶ Literature has shown that children with congenital hand deformities experience low self-esteem, stress, social anxiety, and depression when they become aware of physical disfigurements.^{3,50,51} Hermansson et al⁵² reported that children with upper-limb reduction deficiency more often experienced withdrawn behavior when compared with standardized norms.

Decision making regarding reconstructive surgery for hand anomalies is difficult for parents, who provide consent for invasive, complex procedures. Therefore, demonstrating the aesthetic benefits of surgical interventions can provide reassurance that surgical correction of deformities is worth pursuing. Unfortunately, there are unique challenges in assessing aesthetic outcomes of surgeries for con-

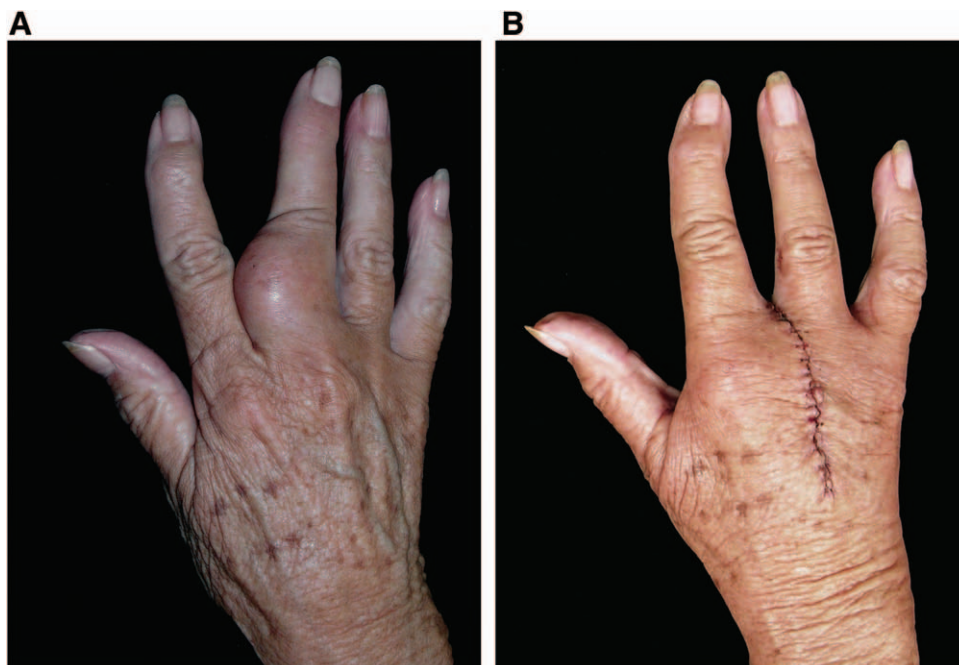


Fig. 6. Malignant tumor of the long finger proximal phalanx (A) requiring digit amputation (B).

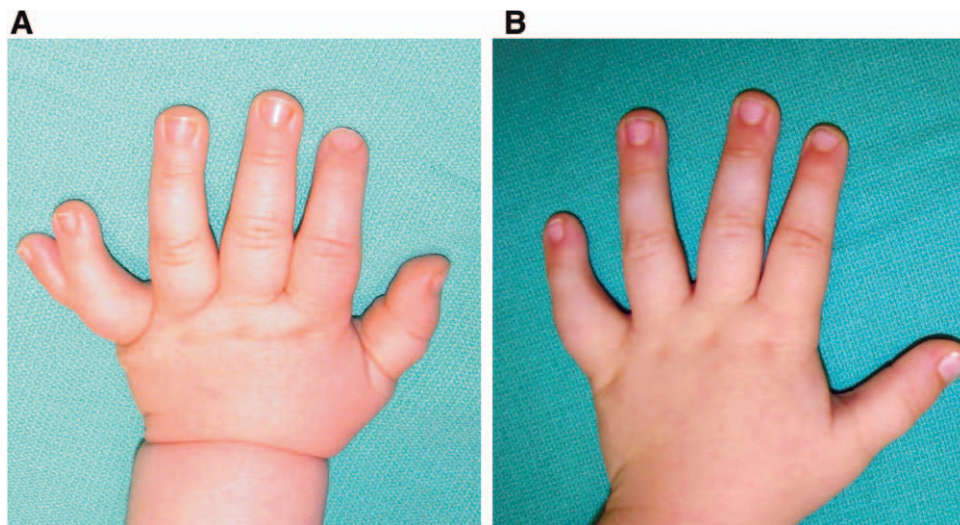


Fig. 7. Ulnar polydactyly (A) with excellent aesthetic outcome 18 months after surgical resection (B).

genital hand deformities. First, given the burden of disease, normal appearing hands may not be attainable (Fig. 8), and second, psychological factors (eg, guilt) may influence a parent's subjective assessment of aesthetic outcomes.

Aging

Bains et al. showed that people can estimate the age of an individual based on hand appearance.⁷ Cosmetic surgeons have also observed that patients notice the discrepancy between rejuvenated facial appearance and senile hands.⁸ Therefore, antiaging hand treatments (eg, laser therapy for photoaging pathology) have gained interest.²⁹ More invasive therapies directed at masking age-related changes include sclerotherapy for tortuous veins and autologous fat grafts or dermal fillers for soft-tissue restoration.⁸ Because antiaging procedures are relatively new, elective, commercially influenced, and privately funded, there is less interest in objectively evaluating outcomes. Regardless, patients will query

hand surgeons on the effectiveness of procedures as interest grows.

EVALUATING HAND AESTHETICS

The use of hand aesthetics as a patient-reported outcome in clinical research has influenced the indications and demonstrated the effectiveness of surgical interventions in hand surgery.^{10,16,40,53} Although, quantifying aesthetic improvement may influence treatment decisions, obtaining these data relies on appropriate outcome assessment instruments. Several outcome instruments exist in hand surgery research, but hand aesthetics is infrequently explicitly included. For example, the Disabilities of the Arm, Shoulder, and Hand instrument assesses the construct of "function," but this only implicitly evaluates hand appearance.^{14,54} Conversely, the Michigan Hand Outcomes Questionnaire is a validated and reliable tool widely used in hand research that includes a domain dedicated to hand appearance.¹² Table 2 provides a list of outcomes instruments (or strategies) commonly employed in hand surgery research.

In lieu of a validated instrument, many researchers utilize ad hoc questions with visual analog scales, Likert scales, or available scar scales to assess hand appearance.¹¹ Tyack et al¹⁸ performed a systematic review of available scar scales, and of 18 investigated instruments, the Patient and Observer Scar Assessment Scale and Vancouver Scar Scale were the most robustly validated.^{21,55,57} Unfortunately, both of these instruments were deemed to have intermediate quality clinimetric properties (eg, validity and reproducibility). Furthermore, the applicability of scar scales to hand aesthetics has not been robustly investigated.

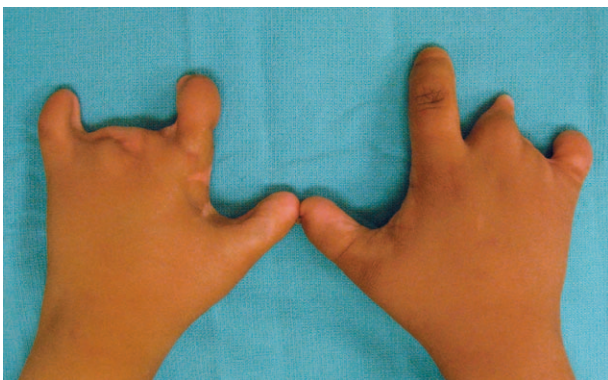


Fig. 8. Amniotic band syndrome.

Table 2. Methods Used to Assess Hand Aesthetics in Literature

| Instrument | Description | Aesthetic Domains | Measurement Method |
|--|---|--|--|
| Outcomes instruments | | | |
| Michigan Hand Outcomes Questionnaire ¹² | Hand-specific outcomes instrument developed to assess outcomes deemed important to patients, hand therapists, and hand surgeons; patient questionnaire | Four questions on appearance Satisfaction with appearance Comfort with appearance in public Effect of appearance on mood Effect of appearance on social activities | 5-point Likert scale |
| Vancouver Scar Scale ⁵⁵ | An observer instrument created in 1990 (and modified by other authors) to demonstrate the pathologic condition of burn scars | Pigmentation vascularity | Pigmentation (normal, hypopigmented, mixed, hyperpigmented); vascularity (normal, pink, red, purple) |
| Buck-Gramcko Score ⁵⁶ | Originally created in 1976 for use in German literature to evaluate objective and subjective outcomes after flexor tendon interventions; observer and patient questionnaire | Global question on appearance | Excellent Good Acceptable Poor |
| The Patient and Observer Scar Assessment Scale ⁵⁷ | Designed in 2004, based on the Vancouver Scar Scale, to evaluate scars from both an observer and patient perspective; observer and patient questionnaire | Observer domains Pigmentation Vascularity Patient domains Color of scar Irregularity of scar | 10-point Likert scale |
| Ad hoc methods | | | |
| Visual Analog Scale | Shown by Duncan et al ⁵⁸ to be a reliable method of assessing scar appearance; observer or patients instrument | Question(s) determined by author, although typically used for a global question on appearance | Visual Analog Scale |
| Likert scale | Nonstandardized method of assessing observer or patient perspective on outcomes | Question(s) determined by author, although typically used for a global question on appearance | Likert scale |

Table 3. Assessing Hand Aesthetics With 5 Core Domains

| Domain | Examples of Questions | Explanation |
|-------------------------|--|---|
| Global | What is your overall assessment of the appearance of your hand? | A global assessment of hand appearance provides a general overview of satisfaction |
| Psychosocial | Do you care about what others think of your hand appearance? | Understanding the psychosocial impact of hand appearance provides insight into the importance placed on hand aesthetics by an individual |
| Expectations | Do you believe the appearance of your hand could be better? | The attitudes and expectations of patients regarding hand appearance (and potential benefit of interventions) will dictate their achievable level of satisfaction |
| Symmetry | Does your affected and nonaffected hand look symmetrical (similar)? | Asymmetrical hands accentuate abnormalities. Symmetrical hands, in terms of features (eg, pigmentation, contour, shape), are more desirable, and therefore, improve hand appearance |
| Disease or intervention | How has your hand ailment (eg, rheumatoid arthritis)/intervention (eg, surgery) affected the appearance of your hands? | This domain reveals how a patient perceives the impact a disease (or intervention) has had on a patient's hand appearance |

FUTURE DIRECTION IN EVALUATING HAND AESTHETICS

Measuring and reporting “what matters” to patients is fundamental to understanding and communicating the burden of disease or success of health-care interventions.⁵⁹ Theoretically, a universally accepted, standardized aesthetic assessment

instrument would allow for accurate comparison of outcomes across literature.^{60,61} Further research is needed to demonstrate the quality of currently available aesthetic assessment instruments, as the particular instrument used is less important than demonstrating the validity (and responsiveness), reliability, interpretability, feasibility, and minimal

clinically important difference of the tool.^{15,18,62} Alternatively, efforts can be directed at designing a universal assessment tool dedicated to hand aesthetics.

We present a simple approach to evaluating a patient's perception of hand appearance. Through our literature review, we conclude that hand appearance is (1) unique to each patient with influences from age, sex, culture, and occupation; (2) dependent on the hand pathology; (3) related to the chronicity of disease; and (4) may be of variable importance. Furthermore, a patient's opinion of their hand appearance may be adversely influenced by social perceptions. Hand aesthetics, therefore, is best understood as a self-concept that is dynamic and responsive to biopsychosocial factors. Table 3 refers to 5 domains that evaluate a patient's perceptions of hand appearance. Our approach captures a patient's global assessment, interest, and expectations of hand aesthetics in the context of a disease or surgical intervention. These domains can provide the foundation for creating a future assessment tool or be used by health-care providers to evaluate an individual's perspective of hand appearance.

CONCLUSIONS

Evaluating hand appearance can demonstrate the impact of hand pathology and the effectiveness of therapeutic interventions. Although functionality remains the mainstay of determining the success of surgical interventions in hand surgery, aesthetics should be regarded as a pertinent outcome, worthy of being measured and monitored. Currently, available outcome instruments lack detailed, precise assessments of aesthetic discomfort. Therefore, a common method of assessing appearance is with ad hoc questioning, which makes comparison of outcomes across literature difficult. Further research is required to investigate how hand appearance can be accurately and thoroughly assessed. We propose 5 important domains to capture when evaluate hand appearance including a global assessment, symmetry, expectations, psychosocial influences, and disease-specific morbidity.

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