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A Systematic Review of Ethical Principles in the Plastic Surgery Literature

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Abstract

Background: To perform a systematic review to identify articles that discuss ethical issues relating to the field of plastic and reconstructive surgery and to evaluate whether ethical issues are underrepresented in the plastic surgery literature.

Methods: Four medical databases were selected to search through the medical literature with specific inclusion criteria to disqualify irrelevant articles from the study. Appropriate articles were extracted, and their quality and validity were assessed by multiple investigators to maximize reproducibility. The data were then synthesized and analyzed for associations amongst the ethical principles.

Results: Out of a total library search of >100,000 plastic surgery oriented articles, only 110 clearly focused on ethical principles. Autonomy (53%) was the most common major theme, whereas distributive justice (15%) represented the least frequently emphasized ethical principle. The proportions of each ethical principle were tested against each other for equality using Cochran's Q test; the Q test reached statistical significance ($Q = 67.04$, $df = 3$, $P < 0.0001$), indicating that the ethical principles were not discussed equally in plastic surgery literature, which was expected because autonomy represented 53% of the manuscripts whereas distributive justice represented only 15% of manuscripts. When examining both major and minor themes, over half of the articles (61%) addressed 2 or more ethical principles. Beneficence and nonmaleficence were strongly associated (Pearson's $\chi^2 = 55.38$, $df = 1$, $P < 0.0001$).

Conclusions: Despite the extensive amount of ethical issues that plastic surgeons face, a relatively small proportion of plastic surgery literature was dedicated to discussing ethical principles.

Keywords

Systematic Review; Ethics; Principles; Plastic Surgery

Plastic and reconstructive surgery is continuously at the forefront of medical research and discovery. In 1954, plastic surgeon Joseph Murray led a team of surgeons to transplant a kidney into a 23-year old dying man, resulting in the first successful long-term organ transplant in a

human.(1) In 1999, the plastic surgery team at Louisville helped perform the first hand transplant that achieved prolonged tissue survival, and in December 2008, plastic surgeons in Cleveland led a team in performing the first facial allotransplant in the United States. As evidenced by these examples as well as many others, plastic surgeons often guide the way in innovative surgical discoveries. However, with these novel techniques come numerous ethical challenges unique to the plastic surgery community. For example, plastic surgeons are faced with ethical dilemmas about whether to perform operations on patients to enhance what is normal rather than restoring health to the diseased or disfigured. Other ethical issues relate to conducting research using human subjects to test the effectiveness of an innovative surgical procedure, or performing surgery on a patient who may not be fully informed because of misleading advertisements and media messages.(2) Despite the complex ethical dilemmas plastic surgeons face, it is uncertain if ethical principles are adequately presented in the plastic surgery literature. Studies have shown that there is a disproportionately small amount of ethical content in the medical literature (3,⁴). For example, a recent analysis of ethical content in the rheumatologic literature found that in an estimated library of >400,000 rheumatology- related articles, only 104 had an ethical focus (5).

In the United States the most widely adopted construct is principlism, or the study of ethics based on the four moral principles of autonomy, beneficence, nonmaleficence, and distributive justice (Table 1). This framework described by Beauchamp and Childress in 1979(6) represents the commonly adopted and taught foundation in medical ethics. The first of these principles – autonomy – is the respect for the patient's right to self-governance, choice in care, and the right to accept or refuse treatment. The second principle – beneficence – is the obligation to prevent or remove harm while also promoting good by contributing to the welfare and acting in the best interest of the patient. The third principle – nonmaleficence – is the obligation of physicians not to inflict harm or adverse effects on the patient from inappropriate or absent care. The fourth and final ethical principle – distributive justice – means distributing benefits, risks, and costs fairly, equitably, and appropriately, and treating patients with similar cases in a similar manner.

Because plastic surgery is continuously confronted with novel and complex ethical issues, ethical consideration should be amply presented in the plastic surgery literature. In order to examine the prevalence of ethical discussion in plastic surgery literature and to evaluate the emphasis on ethical principles, we performed a systematic review to identify all the plastic surgery publications, focusing on bioethics by relying on the framework developed by Beauchamp and Childress. We conducted this research with the hypothesis that ethical issues are underrepresented in the plastic surgery literature.

Materials and Methods

Search Criteria

We conducted a literature search beginning in July 2008 using Medline, Cochrane Central Register for Clinically Controlled Trials, The National Reference Center for Bioethical Literature (NRCBL) and ISI Web of Science in order to identify all citations relating to plastic and reconstructive surgery and ethics (Table 2). Four medical databases were selected because prior studies emphasized the need to search a range of databases in order to identify as many relevant articles as possible (7-9).

For Medline and Cochrane Register, the following medical subject headings (MeSH) were used along with the Boolean search function, “(exp Plastic Surgery/ or exp Reconstructive Surgical Procedures/ or reconstructive surgical techniques mp/) and (exp ethics, nursing/ or exp ethics/ or exp ethics, clinical/ or exp ethics, medical/ or exp ethics, research/ or exp principle-based ethics/ or exp bioethics/ or exp patient rights/ or exp bioethical issues/ or exp

patient advocacy/es [ethics]/ or “conflict of interest”/ or exp beneficence/ or nonmaleficence mp/ or exp personal autonomy/ or exp social justice/ or exp “delivery of health care”/es [ethics]). The ISI Web of Science interface used similar Boolean expression of keywords as Medline. Because NRCBL is an ethics database and contains only materials concerned with issues in biomedical and professional ethics, only keywords pertaining to plastic surgery were searched using Boolean expression. A complete list of keywords and MeSH headings for ISI Web of Science and NRCBL are available upon request.

Inclusion criteria

We included both research and non-research manuscripts from peer-reviewed journals. Research manuscripts were categorized into either quantitative analyses or qualitative research studies. Letters to the editor, editorials/commentaries, case reports, and highlighted news stories within a scientific journal were the acceptable non-research manuscripts. Only human-based topics and articles written in English were used. The contents of these articles also had to focus on at least one of the four ethical principles of autonomy, beneficence, nonmaleficence and distributed justice, as described by Beauchamp and Childress (6).

Identification, selection and classification of relevant manuscripts

The data were abstracted from the included articles by investigators (AP, LB) and verified by the senior author (KCC) who has substantial expertise in systematic reviews and meta-analyses (8,10-14). We collected data for each of the 4 ethical principles and reported major and minor themes separately (Figure 1).

Statistical Analysis

After identifying the articles that met our specific criteria, the manuscripts were classified by which of the four of Beauchamp and Childress' ethical principles were described. The major and minor themes were reported separately. After categorizing the data, we used the Cochran Q test to assess whether all four of the ethical principles were discussed equally in the plastic surgery literature.(15)

A Pearson chi-square test was performed between each pair of principles discussed as either a major or a minor theme to determine if any of the 4 principles tended to appear together. If a chi-square test was found to be significant, the phi coefficient for nominal variables was used to determine strength and direction of the association.(15) Positive associations were reported. Using the cutoffs suggested by Cohen, a phi-coefficient value > 0.30 was taken to indicate moderate positive association, 0.10-0.29 to indicate a small positive association, and any value <0.10 to indicate no positive association (16).

Results

Study Retrieval

From our extensive search, 638 articles were identified. A trial flow diagram was followed and articles were excluded for several reasons, either they focused on issues other than plastic and reconstructive surgery (233), did not have sufficient bioethical discourse (196), were non peer-reviewed or non-English sources (39), or were duplicates (60) (Figure 2).

The total number of articles focusing on ethical principles was 110 out of an estimated >100,000 plastic and reconstructive surgery oriented published manuscripts (~.1%) (See Appendix 1). Of the total 110 manuscripts, 36% represented original research ((28%) qualitative and (8%) quantitative research), whereas 64% were non-research in nature. Fifty-one percent of the total manuscripts were editorial/commentary articles, 5% were case reports, and 8% were letters to the editor (Table 3).

Article Characteristics

The included articles addressed a broad spectrum of ethical concepts, broaching at least one of the ethical principles. The articles were read and categorized by the ethical principle(s) that was focused on in the paper (major theme). The majority of the articles also discussed additional bioethical principles that were clearly not the main focus (having only a couple sentence discourse) and this discourse was also noted (minor themes) (see figure 1). From the major themes, respect for autonomy was the most common, representing 53% of the manuscripts. Beneficence (21%) and nonmaleficence (19%) were discussed in approximately equal number of papers. Distributive justice (15%) was the least discussed. Testing using the Cochran's Q statistic confirmed that the percent representation of the principles were significantly different ($Q=38.79$, $df=3$, $P<0.0001$). Because 7 articles had more than one major theme, each principle was counted separately and the numbers were divided by the total number of articles (110). Therefore, these percentages do not add up to 100% (see Table 3).

Approximately 55% of the articles discussed more than 1 ethical principle (Figure 3). The majority of these articles tended to focus on one ethical principle and only briefly touch upon the others. In order to determine if any of the ethical principles tended to appear in the same article, a Pearson's chi-square analysis between each of the possible pairs was conducted. Of the 6 possible pairs, one pair-- beneficence and nonmaleficence -- was found to have a statistically significant tendency to appear together (Pearson's $\chi^2 = 55.38$, $df=1$, $P<0.0001$). The phi coefficient was 0.71, indicating a moderately strong positive association.

When considering both major and minor ideas, autonomy was still the most common, with 78% of the articles having either major (58 articles) or minor (28 articles) reflection on this subject. Similar to the previous findings that only took major themes into account, distributive justice appeared most infrequently (25%) when considering both major and minor ideas. Beneficence and nonmaleficence were approximately equal with each occurring in approximately 50% and 48% of all articles, respectively.

Finally, after reviewing all 110 articles, we found that there were 3 broad topics that often featured bioethical discussion in plastic surgical literature. These categories included patient informed consent (32%), facial allotransplant (19%), and resource rationing and managed care (7%).

Discussion

Bioethics is a relatively young field, only beginning to develop institutionally and professionally during the late 1960s and 1970s. Nevertheless, this field has grown exponentially over these past decades and will continue to develop in conjunction with the advancement of medicine, science, and biotechnology (17).

Despite the meticulous and extensive search, we found plastic and reconstructive surgical literature contained only a relatively small number of manuscripts focusing on ethical issues. Given the prominence of bioethics in modern medicine and the unique and challenging quandaries associated with plastic surgery, we would expect a higher number of manuscripts devoted to ethics. Instead, we found a substantial gap in the amount of ethical inquiry in plastic and reconstructive surgical literature. These findings are consistent with Frederick A. Paola's prior review on this subject, reporting that an "ethics gap" exists between medical and the surgical subspecialty, with medical literature having a much greater percentage of literature devoted to bioethics (3,⁴). The reason for this scarcity of bioethical publications is unclear, but may reflect different priorities within plastic surgery, a lack of understanding of formal ethical concepts, a detached research interest in bioethics, discomfort with non-quantitative

disciplines, or a variety of other reasons (5). Nonetheless, it is concerning that plastic surgery literature is substantially lacking in ethical discourse.

The retrieved manuscripts included sources addressing all 4 of Beauchamp and Childress' ethical principles (Table 1); however, the frequency of each principle varied. Autonomy was by far the most common theme, which is somewhat expected with issues ranging from informed consent (18-²⁰), photography (21) and advertising (22-²⁴), are all which are particularly pertinent to plastic surgery. Makdessian et al.(19) illustrated the importance of autonomy in facial plastic surgery by conducting a study designed to examine informed consent and the effectiveness of oral communication versus written communication about the risks of facial cosmetic procedures. They found that those patients who received oral and written communication about the risks involved with cosmetic procedures had a significantly better recall rate than those who had just oral communication about the risks. These findings are important for a field in which litigation rates can be particularly high if a patient does not fully understand the risk associated with cosmetic surgery procedures (25-²⁷).

Exactly half of the articles found in this review discussed beneficence to some extent. Discussion of beneficence generally focuses around assessing risks versus benefits and judging whether the potential benefits outweigh the potential risks (28). For example, in an article on facial transplantation, Barker et al.(1) quantitatively assessed risk acceptance in facial transplantation by examining the question, "Do the risks posed by long term immunosuppression that the recipient would have justify the benefits of receiving a face transplant?" The authors proposed the Louisville Instrument for Transplantation, LIFT, which asked respondents about how many specific number of life years or other costs they would trade off in exchange for receiving 7 different transplant procedures: foot, hand, larynx, kidney, two hands, hemiface, and face. Even after the respondents were fully informed of the potential risks of rejection and long-term immunosuppression, a significant majority of the subjects said they would undergo the facial transplantation procedure. This study provides evidence in supporting the view that it may be appropriate for patients with facial disfigurements to be invited to participate in clinical studies associated with transplantation surgery (1).

Nonmaleficence is an ethical principle that is often associated with beneficence ($P < 0.0001$). They are related principles; however, nonmaleficence can be distinguished from beneficence because it focused only on the physician's obligation not to inflict harm on a patient and does not imply an act toward the greater good nor does it take benefit into account. This review found that nonmaleficence occurred in slightly less than half of the plastic surgery oriented manuscripts. One of the articles discussing nonmaleficence was written by Miller et al. (29) and evaluated how nonmaleficence relates to plastic surgery, particularly the cosmetic surgery component of plastic surgery. This manuscript stated, "Although increasingly popular, cosmetic surgery is a most unusual medical practice. Invasive surgical operations performed on healthy bodies for the sake of improving appearance lie far outside the core domain of medicine as a profession dedicated to saving lives, healing, and promoting health. These cosmetic procedures are not medically indicated for a diagnosable medical condition. Yet they pose risks, cause side effects, and are subject to complications..."(29) The authors examined the inconsistencies between cosmetic surgery and the basic tenet of nonmaleficence, "primum non nocere" (first do no harm). Reflecting on both principles of nonmaleficence and autonomy, Miller et al. argued that cosmetic surgery may be considered as a peripheral medical practice, somewhat similar to sterilization or contraceptives. The authors further argued that in order to keep cosmetic surgery inside the bounds of allowable medical activity, additional steps needed to be taken to curb the unethical marketing of cosmetic surgery procedures (29).

The last of Beauchamp and Childress' ethical principles, distributive justice, refers to society's responsibility to distribute benefits, risks, and costs fairly and appropriately. The topic of

distributive justice has become increasingly relevant to the practice of medicine, as debates about universal healthcare increase in the United States; however, this trend has not been mirrored in the plastic surgery literature, as this was the least discussed ethical principle in the plastic surgery literature. Several of the articles that discussed distributive justice focused on reconstructive procedures and managed care environments, often centering on breast reconstruction or the acceptance or denial of care to patients infected with human immunodeficiency virus (HIV). An article written by Davison et al.(30) discussed the ethical dilemmas that arise when treating HIV patients. Throughout the 1980s and 1990s, ethical issues arose about whether a plastic surgeon was obligated to treat an HIV-positive patient who was seeking cosmetic or reconstructive surgery. Many plastic surgeons argued that it was inappropriate to treat an HIV positive patient seeking elective surgery because of the potential risks of exposure and transmission of the disease from the patient to the operating team. Conversely, not treating this group of individuals could be viewed as discrimination and not ethically sound under the tenet of distributive justice. Davison et al. reports that it became clear later that the risk of transmission was only minimal, and the task force report from the American Society of Plastic and Reconstructive Surgeons declared that discrimination against HIV-positive patient was not to be endorsed.(30)

In general, our findings indicate that bioethical discourse in plastic surgical literature tends to restrict its focus on a single, major ethical principle while only briefly mention others. One exception to this is with the issue of facial allotransplant. This topic had the largest extent of ethical discussion, as the majority of the articles on this topic focused on 2 or more ethical principles relating to facial allotransplant. This is most likely due to the wide array of ethical dilemmas associated with facial allotransplant. Challenges regarding risks versus benefits of this procedure (beneficence), dangerous side-effects from continuous immunosuppression agents (nonmaleficence), and truly informed consent from both the recipient and donor's family (autonomy) were all common arenas for discussion (31-35). The comprehensiveness of ethical discourse on such a novel topic is noteworthy and may indicate a current shift toward a broader discussion of ethical principles.

This systematic review was limited by the quality of published reports. The majority of the manuscripts that matched our inclusion criteria were non-research based, leading to inherent biases in these reports. Furthermore, in such a broad and complicated topic such as "bioethics," definition biases of an individual reviewer may influence the results. We attempted to resolve this bias by using 2 reviewers to abstract the articles and applying only Beauchamp and Childress' principle-based approach to bioethics, which served as a classification system in order to analyze retrieved literature and help curb reviewer biases. We chose Beauchamp and Childress framework because it is the most widely adopted and taught scheme in medical ethics across healthcare disciplines in the United States (36-38). Although we selected the ethical framework most familiar to healthcare providers, we acknowledge that this may have slightly limited our methodology and that an alternative classification system would have revealed a different distribution of ethical content in the plastic surgical literature.

This review has shown that there is an extremely low frequency of ethical discourse in the plastic surgical literature, and that the 4 ethical principles of autonomy, beneficence, nonmaleficence, and distributive justice are not addressed equally. For the field of plastic surgery to continuously advance, plastic surgeons need to devote more attention to ethical reflection. This study should serve as a stimulus to help promote the growth in all areas of ethical discourse.

Acknowledgments

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We appreciate the assistance of Ann Haas, MPH, in the statistical analyses portion of this review.

Appendix 1

The final list of the 110 articles which were included in this systematic review.

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Agich, G.J.; Siemionow, M.	J.Med.Ethics	Until they have faces: the ethics of facial allograft transplantation.[see comment]	2	3
Altchek, E. D.	Plast Reconstr. Surg	informed consent	1	
Armenio, A. et al.	Plast Reconstr. Surg	Informed consent and its central role in plastic and cosmetic surgery	1	3
Armstrong, A. P. et al.	Br. J. Plast. Surg	Informed consent: are we doing enough?	1	
Atiyeh, B. S. et al.	Aesthetic Plast Surg	<i>Aesthetic surgery and religion: Islamic law perspective (?)</i>	1	2,3,4
Aylott, J.	Br. J. Nurs	Should Children with Down Syndrome have cosmetic surgery?	1	
Barker, J. H. et al.	Plast Reconstr. Surg	Investigation of Risk acceptance in facial transplantation	2	3
Barker, J.H.et al.	Ann Plast Surg	Ethical considerations in human facial tissue allotransplantation.	2	1,3
Baroudi, R.	Ann Plast Surg	Why Aesthetic Plastic Surgery Became Popular in Brazil	1	
Bartley, G. B. ; Linberg, J. V.	Ophthalmology	Cosmetic surgery may be hazardous...for the doctor as well as the patient	2	1,3
Bateman, N. D.; Woolford, T. J.	J. Laryngol Otol	Informed consent for septal surgery: the evidence-base	1	3
Black, D.A.; McCraw, J.B.	Plast Reconstr. Surg	Does estrogen-based therapy add to the risk of aesthetic surgery?	3	1
Black, J.	PSN	"Medically Necessary:" Who Should Decide?	2	
Bland, K. I.	Plast Reconstr. Surg	Oncologic and plastic surgeons: colleagues, collaborators, and teammates	4	1
Bolland, B.J. et al.	Plast Reconstr. Surg	A simple tool for outpatient counseling for breast augmentation	1	
Bosch, X.	Lancet	Surgeon denied ethics approval for face transplantation	3	1
Brahams, D.	Lancet	Cosmetic surgery: Greater duty to warn of risks	1	

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Bull, T. R.	LJ. Laryngol Otol	Rhinoplasty: aesthetics, ethics, and airway	2	1
Cantor, J.D.	Plast Reconstr. Surg	When an adult female seeks ritual genital alteration: ethics, law, and the parameters of participation.	1	2,3,4
Carey, J. S.	Aesthetic Plast Surg	Microtia: a personal case study	2	1,3
Castanares, S.	Aesthetic Plast Surg	Ethics in Aesthetic Surgery	3	
Chatterjee, A.	Camb Q Health Ethics	Cosmetic Neurology and Cosmetic Surgery: Parallels, Predictions, and Challenges	4	1,2,3
Clark, P.A.	Med. Sci. Monit	Face Transplantation: a medical perspective	3	2
Clarke, A.; Butler, P. E. M	Expert Opin Biol Ther	Facial transplantation: adding to the reconstructive options after severe facial injury and disease	2	1,3
Cole, N. M	Clin. Plast. Surg	Informed consent: considerations in aesthetic and reconstructive surgery of the breast	1	
Cole, N. M.	Clin Plast Surg	informed consent - considerations in aesthetic and reconstructive surgery of the breast	1	
Daaboul, J. ; Frader, J.	J. Pediatr. Endocrinol. Metab	Ethics and the management of the patient with intersex: a middle way	1	2
Danino, A. M. et al.	Plast Reconstr. Surg	Visual documentation of oral consent: a new method of informed consent before major gigantomastia reduction for an illiterate population.	1	2
Davison, S. P. et al.	Plast Reconstr. Surg	Preoperative guidelines for elective surgery in the human immunodeficiency virus-positive patient	3,4	1,2
de Chalain, T. M. B.	Plast Reconstr. Surg	Ethical Resource Allocation and the Quest for Normalcy: Is Pediatric Reconstructive Surgery Justified?	4	1

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Evans, M.	Aust. J. Adv. Nurs	Augmentation mammoplasty: neither simple nor safe	1	
Frankel, C. A.; Juengst, E. T.	J. Pediatr. Ophthalmol. Strabismus	Cosmetic Surgery for a Fatally Ill Infant	1	2
Frankel, J.	Surv. Ophthalmol	Maloccurrence in oculoplastic surgery related to the managed care environment.	4	
Friedland, B.	Plast Reconstr. Surg	The Americans with Disabilities Act: Should it Compel Cosmetic Treatment for HIV Positive Individuals?	4	
Glasper, E. Powell, C.	Br. J. Nurs	Facial surgery and children with Down's syndrome	1	2,3
Goering, S.	Am. J. Bioeth	Facing the consequences of facial transplantation: individual choices, social effects	1	2,3
Golan, J. Ben-Hur, N.	Med Law	informed consent in plastic surgery	1	
Goldwyn, R. M.	J. Am Podiatr. Med. Assoc	Reality in plastic surgery. A plea for complete disclosure of results	1	
Goldwyn, R. M.	Plast Reconstr. Surg	Unproven treatment: whose benefit, whose responsibility?	3	
Goldwyn, R. M.	Plast Reconstr. Surg	AIDS, Aesthetic Surgery, and the Plastic Surgeon	4	
Greenberg, G.	Clin. Plast. Surg	Lipoplasty: the informed consent and medicolegal considerations	1	
Greene, J.	Hosp Health Netw	Al wants more hair, less fat and a better sex life...and he wants his health plan to pay for it.	4	
Habal, M.B.	J. Craniofac Surg	Issues concerning crossing the barriers in plastic surgery	2,3	
Hale, C. J.	Perspect.Biol.Med	Ethical problems with the mental health evaluation standards of care for adult gender variant prospective patients	1*,2,3	4
Hamdy, R. C.	South Med J	Face transplantation: a brave or maverick surgery?.	2	1,3

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Hendi, J.M. et al.	J. Craniofac Surg	Plastic surgery considerations for holoprosencephaly patients.	2	3
Hermer, L.	Ann Health Law	Paradigms revised: intersex children, bioethics & the law	1	
Hilhorst, M. T.	Med Hum	Philosophical pitfalls in cosmetic surgery: a case of rhinoplasty during adolescence	1	2
Holden, C.	Science	Face transplants: next step in plastic surgery?	2	1,3
Horner, B.	Ann R. Coll Surg Engl	Breast augmentation should be on the NHS: a discussion of the ethics of rationing	4	
Horton, J.B et al.	Plast Reconstr. Surg	Patient safety in the office-based setting	3	1,2
Huxtable, R.; Woodley, J.	J. Med Ethics	(When) will they have faces? A response to Agich and Siemionov. [comment]	2	1,3,4
Huxtable, R.; Woodley, J.	Bioethics	Gaining face or losing face? Framing the debate on face transplants.	1,2,3	
Hyman, D. A.	Perspect.Biol.Med	Aesthetics and ethics: the implications of cosmetic surgery.	3	1,2,4
Jacobs, E. W.	Plast Reconstr. Surg	Another dimension for informed consent	1	
Jonsen, A. R.	Plast Reconstr. Surg	The fall of Asklepios: medicine, mortality, and money	4	
Kalter, P.O et al.	Facial Plast Surg	Medicolegal aspects of otolaryngologic, facial plastic, and reconstructive surgery	1	
Kay, J. B. et al	Plast Reconstr. Surg	Social response in children with severe cognitive impairments: Factors in craniofacial surgery decision-making	1	2,3,4
Kessler, D. A. et al	JAMA	A call for higher standards for breast implants	1	
Laskin, D. M.	J. Oral Maxillofac. Surg.	Do you get the picture	1	
Levine, J.M. et al.	Arch Facial Plast Surg	Informed consent for rhytidectomy: a survey of AARPRS fellowship programs	1	

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Lister, G. D.	Plast Reconstr. Surg	Ethics in Surgical Practice	1	2
Makdessian, A.S. et al	Arch Facial Plast Surg	Informed consent in facial plastic surgery: effectiveness of a simple educational intervention	1	
Mantese, T. et al.	Mich Bar J	Cosmetic Surgery and Informed Consent	1	
McCoy, J. P.	Ethics Sci Med	Plastic Surgery and the limits of medicine	2,3	
McG Taylor, D et al.	J. Plast. Reconstr. Aesthet. Surg.	A study of the personal use of digital photography within plastic surgery	1	
Meningaud, J.P. et al.	Med. Law	Ethics and aims of cosmetic surgery: a contribution from an analysis of claims after minor damage	2	
Miller, F. G. et al.	Camb Q Health Ethics	Cosmetic Surgery and the Internal Morality of medicine	3	1,2
Morain, W. D.	Plast Reconstr. Surg	Reply to the editorial on AIDS, aesthetic surgery, and the plastic surgeon	4	
Morain, W. D.	Ann Plast Surg	Hollow Fears	4	
Morris, P. et al.	Transplantation	Face Transplantation: A Review of the Technical, Immunological, Psychological and Clinical Issues with Recommendations for Good Practice	3	1,2
Mouradian, W. E.	CPCJ	Who decides? Patients, Parents, or Gatekeepers: Pediatric Decisions in the Craniofacial Setting	1	2,3,4
Nardi, C.	Wisconsin Law Review	WHEN HEALTH INSURERS DENY COVERAGE FOR BREAST RECONSTRUCTIVE SURGERY: GENDER MEETS DISABILITY	4	1
O'Brien, C. M. et al.	J Plast Reconstr Aesthet Surg	Consent for plastic surgical procedures.	1	2,3
Olbourne, N. A.	J Law and Med	The influence of Rogers v. Whitaker on the practice of cosmetic	1	

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
		plastic surgery		
Padgett, B. L.; Haas, T.	Plast Surg Nurs	An ethical wrinkle of the face of therapy claims	1	
Peled, Z.M.; Pribaz, J. J.	South Med J	Face transplantation: the view from Harvard Medical School.	1	2,3
Petit, F. et al.	Plast Reconstr. Surg	Face Transplantation: Where do we stand?	3	2
Pleat, J. M. et al.	Plast Reconstr. Surg	Communication of risk in breast augmentation	1	
Pomahac, B. et al	Transplantation	Facial transplantation and immunosuppressed patients: A new frontier in reconstructive surgery	2	1,3
Rangecroft, L.	Arch Dis Child	Surgical management of ambiguous genitalia	2	1,3
Redden, E. M. et al.	Plast Reconstr. Surg	The Patient, the Plastic Surgeon, and Informed Consent: New Insights into Old Problems	1	
Reddick, L. P.	Plast Reconstr. Surg	From a Broken Soapbox: Misadventures in Plastic Surgery	1	2,3,4
Rohrich, R. J.	Plast Reconstr. Surg	Ethical approval of clinical studies, informed consent, and the Declaration of Helsinki: what you need to know.	1	2
Rudd, L.J.	Clin. Plast. Surg	Legal Issues in pediatric plastic surgery	1	
Ruel, M. D.	J. Leg Med	Vanity Tax	4	
Sheldon, S. Wilkinson, S.	Bioethics	Female genital mutilation and cosmetic surgery: regulating non therapeutic body modification	3	1,3
Siemionow, M. et al.	Curr. Opin. Organ Transpl	Ethical issues in face transplantation	1	2,3
Siemionow, M.; Agaoglu, G.	Clin Plast Surg	Tissue transplantation in plastic surgery	2,3	1
Sorta-Bilajac, I.; Juretic, M.; Muzur, A.	Otolaryn Health. Neck Surg	Bioethics of appearance and the quality of life issue: who makes the decision?[comment].	1	2,3
Spilson, S. V. et al.	Plast Reconstr. Surg	Are plastic surgery advertisements	1	

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
		conforming to the ethical codes of the American society of plastic surgeons?.		
Sullivan, P.	CMAJ	Plastic surgeons take advantage of relaxed rules, launch ad campaigns	1	
Suziedelis, A. K.	Health Care Ethics USA	Cosmetic surgery for children with Down Syndrome: the cruelest cut of all?	2	
Szajerka, T. et al.	Adv. Clin Exp Med	Face transplantation - New possibilities and risks	3	1,2
Taure, H. et al.	J. Oral Maxillofac. Surg.	Facial Transplantation: A Comprehensive Review of the Literature	3	2
Tebbetts, J. B.; Tebbetts, T. B.	Plast Reconstr. Surg	An approach that integrates patient education and informed consent in breast augmentation	1	
Tempest, M. N.	Br. J. Plast. Surg	Is the policy of informed consent in the interest of the surgeons of the patients?	1	
Tracy, E. E.	Obstet.Gynecol	<i>Elective vulvoplasty: a bandage that might hurt.</i>	3	1
Ward, C. M.	Br. J. Plast. Surg	Consenting and Consulting for cosmetic surgery	1	
Ward, C. M.	Br. J. Plast. Surg	Advertising and boundary disputes	1	
Ward, C. M.	Br. J. Plast. Surg	Rationing and resource management	4	
Ward, C. M.	Br. J. Plast. Surg	Surgical Research, experimentation, and innovation	1	2,3
Ward, C. M.	Br. J. Plast. Surg	Consenting to Surgery	1	
Ward, C. M.	Br. J. Plast. Surg	Defining medical ethics	1	2,3,4
Ward, C. M.	Br. J. Plast. Surg	An ethical and legal perspective on foetal surgery	2	1,3
Webb, S. M.	Ann Plast Surg	Medical ethics under managed care: how can the patient survive?	4	1,2,3
Wiggins, O.P. et al.	Am. J. Bioeth	On the ethics of facial transplantation research	2,3	1

Author Name(s)	Journal	Title of Article	Major Theme(s)	Minor Theme(s)
Wijsbek, H.	Ethical Theory Mor Pract	How to Regulate a Practice: The Case of Cosmetic Surgery	4	
Wyatt, J.P.	Plast. Surg. Nurs	Preparing for breast augmentation: informed consent.	1	
	Plast Reconstr. Surg	Informed consent for body contouring procedures in the massive weight loss patient.	1	2,3,4

Key

1=Autonomy

2=Beneficence

3=Nonmaleficence

4=Distributive Justice

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Distribution of Ethical Discourse

Figure 1. Distribution of ethical principles. Autonomy is the most commonly discussed with 58 articles having autonomy as a major theme and 28 articles discussing autonomy in brevity.

Figure 2.

Flow chart showing search strategy, inclusion and exclusion criteria, and citation results.

Number of Ethical Principles Discussed in Each Manuscript

Figure 3.
The number of ethical principles covered in each article.

Table 1

Descriptions of Beauchamp and Childress' four ethical principles and how each pertains to plastic surgery.

Ethical Principle	Description	Example in Plastic Surgery
Autonomy	Acknowledge and respect a patient's right to self-choice and self-governance free from interference of others and from limitations towards making informed decisions	Cosmetic surgeons have come under scrutiny that some of their advertisements may be deceptive or intended for the solicitation of vulnerable customers, and thus receiving full and informed consent from patients about surgical procedures is jeopardized. ⁽¹⁾
Nonmaleficence	"First, do no harm." Obligation not to inflict harm or adverse effects to patient due to absence of care	Because all physicians take an oath to "first do no harm," plastic surgery often falls well outside the traditional goals of saving lives, treating diseases, and promoting health. ^(2, 3)
Beneficence	Obligation to prevent or remove harm while also promoting good by contributing to the welfare and acting in the best interest of the patient	Many innovative surgical cases are unique and surgeons are constantly amending procedures to try to find the best ways to achieve optimal results; however, some may have undesirable side effects. In a disease state potential benefits vs. the potential benefits are weighed; however, it is often hard to justify if an elective procedure on a healthy individual is worth the potential risk. ⁽³⁾
Distributed Justice	Distributing benefits, risks, and costs fairly, equitably, and appropriately; treating patients with similar cases in a similar manner	Many Americans are without insurance or have insurance plans that cover very little. Certain reconstructive surgeries and almost all cosmetic procedures rarely covered and therefore only financially feasible for the affluent. ⁽²⁾

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Table 2

Specific databases and search interfaces used.

Databases	Interface	Years of access	References *
Medline	Ovid	1950 to July 2008	337
Cochrane Central Register for Clinically Controlled trial and Cochrane Database of Systematic Reviews	Ovid	1940 to July 2008	6
National Reference Center for Bioethics Literature	ETHXWeb	1970 to July 2008	130
Science/Social Science Citation Index	ISI Web of science	1974 to July 2008	165

Table 3

The number and proportion of manuscripts addressing each ethical principle.

	Overall*	Autonomy	Beneficence	Nonmaleficence	Distributive Justice
All Articles*	110	58	23	21	17
Original Research	40	19	11	9	6
<i>Qualitative Study</i>	31	13	9	8	6
<i>Quantitative Study</i>	9	6	2	1	0
Nonresearch	70	39	12	12	11
<i>Editorial/Commentary</i>	56	30	10	11	9
<i>Case Study/Series</i>	5	2	2	0	1
<i>Letter to the Editor</i>	9	7	0	1	1

*The numbers do not add up to 110 because 7 articles focused on >1 ethical principle and each ethical principle was counted separately.