Moral Dilemmas in Pediatric Orthopedics

JOHN J. MERCurI, MD, MA; jONATHAN M. VIGDORChIK, MD; NorMAN Y. oTSUKA, MD

abstract

All orthopedic surgeons face moral dilemmas on a regular basis; however, little has been written about the moral dilemmas that are encountered when providing orthopedic care to pediatric patients and their families. This article aims to provide surgeons with a better understanding of how bioethics and professionalism apply to the care of their pediatric patients. First, several foundational concepts of both bioethics and professionalism are summarized, and definitions are offered for 16 important terms within the disciplines. Next, some of the unique aspects of pediatric orthopedics as a subspecialty are reviewed before engaging in a discussion of 5 common moral dilemmas within the field. Those dilemmas include the following: (1) obtaining informed consent and assent for either surgery or research from pediatric patients and their families; (2) performing cosmetic surgery on pediatric patients; (3) caring for pediatric patients with cognitive or physical impairments; (4) caring for injured pediatric athletes; and (5) meeting the demand for pediatric orthopedic care in the United States. Pertinent considerations are reviewed for each of these 5 moral dilemmas, thereby better preparing surgeons for principled moral decision making in their own practices. Each of these dilemmas is inherently complex with few straightforward answers; however, orthopedic surgeons have an obligation to take the lead and better define these kinds of difficult issues within their field. The lives of pediatric patients and their families will be immeasurably improved as a result. [Orthopedics. 2015; 38(12):e1133-e1138.]

The authors are from the Hospital for Joint Diseases (JJM, JMV), NYU Langone Medical Center, New York; and The Children’s Hospital at Montefiore (NYO), Montefiore Medical Center, Bronx, New York.

The authors have no relevant financial relationships to disclose.

Correspondence should be addressed to: John J. Mercuri, MD, MA, Hospital for Joint Diseases, NYU Langone Medical Center, 301 E 17th St, Rm 1402, New York, NY 10003 (john.mercuri@nyumc.org).

Received: March 23, 2015; Accepted: May 4, 2015.

doi: 10.3928/01477447-20151123-04
Orthopedists regularly face moral dilemmas, especially when treating children. This article aims to provide surgeons with a better understanding of how bioethics and professionalism apply to the care of pediatric patients. The foundational concepts of bioethics and professionalism are discussed and then 5 common moral dilemmas within the field of pediatric orthopedics are reviewed (Table 1).

**Bioethics**

Philosophy derives from the Greek words for love (φιλος) and wisdom (σοφία). Philosophy involves discernment about fundamental aspects of human existence, such as moral or ethical behavior. The word moral derives from the Latin word *mores*, or the characteristic customs or conventions of a community. The word ethics (Greek, *ethos*) translates as nature, disposition, or customs. There is no true distinction between the terms; however, ethics colloquially describes moral behavior within a specific discipline. Bioethics (Greek, *bios*) involves moral behavior as it relates to the biosphere. The biosphere encompasses all living creatures and the environment in which they live. However, colloquial use of the term bioethics refers to medical ethics, or the application of moral principles to health care.

A moral principle is an ideal upon which all conventions, norms, rules, laws, and behaviors should be based. There are 4 foundational moral principles in bioethics: autonomy, beneficence, non-maleficence, and justice. In recent years, many have added confidentiality as a fifth principle to recognize the high social value placed on health care privacy, as embodied by the Health Insurance Portability and Accountability Act.

Autonomy focuses on respect for the patient, and it is defined as the right or interest of patients to make well-informed decisions that define their own lives for themselves, according to their own values and conception of a good life, and in dialogue with their particular society. Beneficence states that the physician is obligated to do good and promote good for the patient. Nonmaleficence states that the physician ought not inflict evil or harm on the patient, and it is often quoted within the medical profession as the Latin phrase *primum non nocere*: “first, do no harm.” Justice states that society has a duty to provide its members with access to an adequate level of health care that fulfills basic needs.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philosophy</td>
<td>Discernment about fundamental aspects of human existence, such as moral or ethical behavior</td>
</tr>
<tr>
<td>Morals</td>
<td>The characteristic customs or conventions of a community</td>
</tr>
<tr>
<td>Ethics</td>
<td>Nature, disposition, or customs</td>
</tr>
<tr>
<td>Bioethics</td>
<td>Moral behavior as it relates to the biosphere, or all living creatures and the environment in which they live</td>
</tr>
<tr>
<td>Medical ethics</td>
<td>The application of moral principles to health care</td>
</tr>
<tr>
<td>Moral principle</td>
<td>An ideal upon which conventions, norms, rules, laws, and behaviors should be based</td>
</tr>
<tr>
<td>Autonomy</td>
<td>The right or interest of patients to make well-informed decisions that define their own lives for themselves, according to their own values and conception of a good life, and in dialogue with their particular society</td>
</tr>
<tr>
<td>Beneficence</td>
<td>Physicians are obligated to do good and promote good</td>
</tr>
<tr>
<td>Nonmaleficence</td>
<td>Physicians are obligated to avoid inflicting evil or harm</td>
</tr>
<tr>
<td>Justice</td>
<td>A duty to provide society’s members with access to an adequate level of health care that fulfills basic needs</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>Physicians have a duty to protect a patient’s health care information</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Commitment to and accountability for publicly declared ideals; a promise to help vulnerable populations, appreciate and engage cultural differences and diversity, and be experts in a field; the responsibility to educate and self-regulate</td>
</tr>
<tr>
<td>Surrogate decision making</td>
<td>A surrogate makes health care decisions for a dependent patient</td>
</tr>
<tr>
<td>Paternalism</td>
<td>The physician or parent acts against the will of the child and is motivated by a claim that the child will be better off or protected from harm</td>
</tr>
<tr>
<td>Utilitarianism</td>
<td>The morally correct action is the one that produces the greatest good for the greatest number</td>
</tr>
<tr>
<td>Deontology</td>
<td>The morally correct action obeys a duty or obligation</td>
</tr>
</tbody>
</table>

**Professionalism**

Professionalism is a necessary component of moral behavior and derives from the Latin verb *profiteri* (to declare publicly). Professionalism is a personal quality and an active behavior. Professionals publicly declare the ideals to which they commit themselves and expect the public to hold them accountable for meeting those ideals. Primary among those ideals are moral principles. Professionals also
make a public promise to help vulnerable populations, appreciate and engage cultural differences and diversity, and be experts in their field. Professionals are subsequently entrusted by the public with the responsibility to educate and self-regulate their members. This synthetic description captures many of the intangible aspects of professionalism. The Accreditation Council on Graduate Medical Education (ACGME) defines professional resident physicians more analytically as those who display compassion, integrity, respect for others, sensitivity and responsiveness to diverse patient populations, respect and adherence to relevant ethical principles, and responsiveness to patients that supersedes self-interest.

**Pediatric Orthopedics**

Children are morally unique because they lack fully developed autonomy. To have moral autonomy, one must display 4 widely accepted characteristics: capacity to understand information, capacity to communicate a choice, ability to use information in a process of reasoning and deliberation, and ability to compare the consequences of alternative choices or courses of action. Not all children meet these criteria, especially younger children. Furthermore, pediatric patients cared for by orthopedics are often cognitively or physically impaired. Traditional dilemmas involving patients with impairments have added levels of complexity, and children with impairments may never achieve moral autonomy. Thus, surgeons regularly encounter both surrogate decision making and paternalism.

Surrogate decision making occurs when a surrogate makes health care decisions for a dependent patient. It relies heavily on the principles of beneficence and nonmaleficence and can be formulated in 1 of 3 ways: first, the surrogate might be charged with acting in the best interests of the patient; second, the surrogate might make decisions based on the known values, preferences, and concerns of the patient; third, the surrogate might be held to decision making that any other reasonable person would agree with. Paternalism (Latin, *pater*) can describe the actions of both the parents and physicians. Paternalism occurs when the physician or parent acts against the will of the child and is motivated by a claim that the child will be better off or protected from harm.

**Consent and Assent**

Consent is a process by which legally binding permission enables a health care event. In orthopedics, this event is often a surgical procedure. Only a person of legal age may provide consent. For children, a parent or legal guardian provides consent. In contrast, assent is an expression of approval or agreement provided by someone younger than legal age. Federal regulation requires assent from minors who are subjects in medical research. A written assent document provides children with information that they can take home with them; signing the documents allows children to feel that their decision matters, and including children in the process enhances respect for their developing autonomy.

It might appear that these different standards create a logical *non sequitur* (Latin; it does not follow). Surgeons require consent of the guardian or parent before operating on a child. The assumptions are that children do not have the ability to make autonomous decisions about their care or to understand what is best for them. However, medical research requires the assent of the child. The assumptions are that children have at least some ability to make autonomous decisions and to understand to some degree what is best for them. It also assumes that children understand what is best for society at large because medical research primarily aims to provide good for future patients.

It is necessary to recognize that research participation is optional and that declining to participate in research may not have any negative consequences. In contrast, surgical care has a presumed direct benefit to the patient and negative consequences in its absence. A higher standard—requiring assent for medical research—is therefore reasonable (Table 2). Moreover, many children possess the capacities necessary for moral autonomy, especially adolescents. It would be disrespectful to forgo assent for research participation because assent respects the developing autonomy of the child subject.

Of course, it is important to remember that assent is a disingenuous ethical protocol that carries no moral consequence for children who do not demonstrate the capacities necessary for moral autonomy. Thus, the surgeon is obligated to assess whether the child possesses moral autonomy before obtaining assent, regardless of the child’s numerical age.

One may also argue that a child should provide assent for surgical procedures. This is most reasonable for nonemergent or nonurgent procedures in adolescents. Legal age is arbitrarily defined, and it is disrespectful to morally autonomous children to forgo their assent preoperatively. Surgical assent should follow a developmental approach wherein the surgeon seeks affirmation in younger children but the equivalent of informed consent in mature teenagers. The major concern with requiring assent for surgery is addressing a child’s dissent to a necessary procedure. However, this scenario is not unprecedented. Ethics committees and judges often overrule the misguided decisions of patients who present a danger to themselves or others. Similar mechanisms can be used for misguided child dissents.

**Cosmetic Surgery**

A wide spectrum of disparate cosmetic procedures exists within the orthopedic care of children. Social functioning and emotional pain may be improved by cosmetic surgery, and these procedures are greatly appreciated by the patient. Surgeons may adopt a cost-benefit approach to decision making in these cases. The perceived benefit to the patient’s quality of
life must be weighed against the potential risks of a surgical intervention (Table 2). One must consider whether the procedure must be performed during childhood or whether it can be postponed until the child reaches consenting age. Cosmetic procedures should only be performed if there is a medical benefit or necessity to performing the procedure during childhood.

Adolescence is a time of psychosocial development and emotional angst. Adolescents are at a high risk for poor decision making regarding physical appearance. Both patients and their parents must understand the value assumptions that underlie any decision to alter one’s physical appearance. These values differ widely across cultures. The surgeon is obligated to consider the personal identity formation of the patient along with an assessment of autonomy to make such a decision. The surgeon should understand the autobiographical life narrative that is being written by the child at a level of detail beyond what is required for noncosmetic treatments.

When considering cosmetic surgery, distinctions must be made between restorative and enhancing procedures, as well as normalizing and marginalizing interventions. Orthopedists must carefully define what it means for their patients to be sick or well. Likewise, a normal patient must be distinguished from a marginal patient. Posttraumatic limb lengthening is clearly restorative to a patient who has experienced bone loss. However, lengthening the functional limbs of an individual with dwarfism may be enhancing anatomy beyond what is necessary for activities of daily living. At the same time, lengthening the extremities of an individual with dwarfism might be viewed as normalizing the patient with dwarfism to the non-dwarf majority.

**CHILDREN WITH IMPAIRMENTS**

Orthopedists regularly care for children who are physically and cognitively impaired. Questions arise about the qualities and characteristics that confer moral status. Are children with impairments worthy of moral consideration because they are Homo sapiens or because they share DNA sequences, possess sentience, express emotions, or have families? Do some lack moral status because of an absence of Aristotelian telos, nous, or phronesis (Greek; purpose, reason, and practical wisdom)? These are some of the biggest questions within moral philosophy, and they will not be easily answered by orthopedists.

However, orthopedists will face questions of resource utilization regarding children with impairments. There are 2

---

**Table 2**

<table>
<thead>
<tr>
<th>Moral Dilemma</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consent and assent</td>
<td>A major medical center is conducting a study on pediatric bone tumors, and the research team is collecting postoperative tissue samples. The parents of a 10-year-old boy consent to the surgical removal of an osteochondroma that is compressing his peroneal nerve, and they also consent to the inclusion of the excised tumor for the researcher’s tissue bank. The child, however, refuses to assent to the inclusion of his bone in the tissue bank, and the bone is discarded after the operation.</td>
</tr>
<tr>
<td>Cosmetic surgery</td>
<td>A 15-year-old girl with a congenitally foreshortened second metatarsal desires a longer toe so she can wear sandals in the summer without being teased by her peers. The parents support their daughter, and after a lengthy discussion of the risks and benefits, the parents provide consent for the surgery. Three weeks postoperatively, the external fixator pin sites become infected and require operative debridement. The infection tracts down to the osteotomy site. The patient requires extended antibiotic therapy.</td>
</tr>
<tr>
<td>Impaired children</td>
<td>A child with advanced scoliosis also has an unspecified cardiomyopathy that was declared recalcitrant to medical management several years ago. After consulting multiple orthopedists across many hospital centers, the parents are unable to find a surgeon who feels comfortable attempting the procedure due to the cardiomyopathy. The child then sees a new cardiologist who offers a different diagnosis of the heart condition and an alternative approach to treatment. This alternative approach significantly improves the child’s cardiac function, and a new surgeon agrees to proceed with the surgery.</td>
</tr>
<tr>
<td>Pediatric athletes</td>
<td>A 16-year-old soccer player tears her anterior cruciate ligament while playing in a summer soccer league. She is a top player in the state, and her upcoming fall season is in jeopardy. She is starting her junior year of high school, and it is important for her to have a strong season to demonstrate her skills to college recruiters. An orthopedist reconstructs her anterior cruciate ligament, and the patient is now progressing through the rehab protocol. The patient and the family want to accelerate the rehabilitation protocol so that she can return to play as quickly as possible and salvage her season. Their desired rehabilitation time line is faster than what the surgeon feels comfortable with, and the risk of re-injury is high.</td>
</tr>
<tr>
<td>Meeting demand for care</td>
<td>A large region of a Midwestern state does not have any practicing pediatric orthopedists. The general orthopedists had been treating pediatric conditions for many years as part of their practices to meet the demand for care. As the senior generalists retire, younger orthopedists move into the area to practice. However, the younger surgeons are not fellowship trained in pediatrics and feel uncomfortable caring for pediatric patients. The closest metropolitan area with a pediatric orthopedist is a 2-hour drive away.</td>
</tr>
</tbody>
</table>
broad approaches to consider. The first is consequentialism, widely understood as utilitarianism. The morally correct utilitarian action is the one that produces the greatest good for the greatest number.28 This is the dominant approach used in Western health care. All variables that impact the outcome are identified, valued, and summed. The impairment of a child is debatable as a positive or negative variable in the calculus, but it is only one variable among many. In contrast, the other major approach is nonconsequentialism, most commonly understood as deontology.11 In this framework, the moral agents have duties or obligations to act in ways that may not maximize utility. For example, the social contract of a morally just society might demand equal access to treatment for all patients, regardless of impairment, and that physicians have a moral obligation to treat all patients equally.

Two cognitive biases commonly arise when discussing children with impairments. First, impairment bias is a subconscious discrimination against physically or mentally impaired individuals based simply on their impairments.29 This bias may lead one to assign an excessive negative value to the patient’s impairment in a consequentialist calculus. Second, anchor bias is a subconscious over-reliance on one piece of salient information in a clinical scenario.30 This bias may subsequently lead one to ignore other important pieces of information or alternative treatment possibilities (Table 2). Anchor bias is a common cognitive hazard in all of medicine, but it is especially acute in scenarios where impairment is a major piece of salient information. The surgeon must be careful to avoid these biases. As with all patients, the surgeon must remain focused on providing high-quality care for children with impairments as guided by principled moral decision making.

**Pediatric Athletes**

As many as 21.5 million children between the ages of 6 and 17 years participate in organized team athletics in the United States.31 Child athletes sustain injuries ranging from strains and sprains to fractures and ligament tears. Roughly 2.7 million children younger than 19 years were treated for sports related injuries from 2001-2009, with approximately 70% of these occurring in children between ages 10 and 19 years.32 In professional athletics, there is a triad of conflicting interests comprised of the surgeon, the athlete, and the team. The goals of the athlete and team are often focused on athletic performance and success, whereas the goals of the surgeon are focused on the long-term health of the athlete.33 Pediatric athletics are further complicated by the interests of the parents, thereby creating a quadrad of conflict.34

The principles of beneficence and nonmaleficence are paramount. The surgeon is obligated to align all parties with the best interests of the child. In some cases, the surgeon must assume a paternalistic role to achieve this goal. Pediatric athletes are at high risk for poor decision making (Table 2). It is difficult to maintain perspective beyond the game or season at hand, and the rewards for a quick return to play are alluring. It is important for the surgeon to understand the patient’s entire athletic narrative. Taking extra time to build a strong surgeon-patient rapport will enhance the athlete’s compliance.

**Meeting Demand for Care**

A discrepancy exists between the pediatric orthopedic workforce and the demand for care. Approximately 3% of practicing orthopedists are fellowship trained, and anywhere from 3% to 8% of current residents are choosing to enter pediatric fellowships.35,36 It is estimated that 20 to 25 graduating fellows are needed each year to maintain the current workforce levels.35 However, about 35 per year may be needed to meet future demand.37 Demand is increasing not only from population growth, but also from shifting practice models. Orthopedists in community settings face disincentives to care for pediatric trauma and musculoskeletal infection.35 Reasons for this include an adverse reimbursement mix and a lengthy period of malpractice liability.37 As a result, trauma and infection volume are increasing for pediatric fellowship-trained surgeons.38

The principle of justice dictates that the health care system has a duty to provide an adequate pediatric orthopedic care that fulfills basic needs. An orthopedist who takes emergency call is thereby obligated to care for the basic needs of pediatric patients (Table 2). The basics of pediatric orthopedics are debatable and need definition by leaders within the field. The ACGME milestones competency project has proposed that suprcondylar humerus fractures and septic hips are foundational areas of pediatric orthopedics in which all graduating residents must show competency.14 From this starting point, training programs have a duty to ensure that all graduating residents can provide basic pediatric orthopedic care as a professional service to the community.

**Conclusion**

Orthopedists regularly face moral dilemmas, especially when caring for children. This article reviewed the pertinent considerations for 5 moral dilemmas in pediatric orthopedics, thereby providing surgeons with a better understanding of how bioethics and professionalism apply to the care of pediatric patients. Moral dilemmas are inherently complex, and orthopedists have an obligation to address these issues. The lives of pediatric patients will be improved as a result.

**References**

4. Garrett T, Bailie H, Garrett R. *Health Care...


