

ROUNDTABLE DISCUSSION

Resident Education in Orthopaedic Surgery: *Feedback and Autonomy*

Resident education in orthopaedics continues to be a popular topic in the age of ACGME work-hour regulations, patient safety, and an ever-expanding body of knowledge needed for competence.^{1,2,3,4} Many strategies have emerged in an attempt to overcome these challenges including simulation training^{5,6} and earlier skills training in residency⁷. In our own Harvard Combined Orthopaedic Residency Program, we have institutionalized over the past few years the 1-month orthopaedic intern “boot camp” required of all programs, simulation programs in pediatric surgery and surgical disasters, a structured feedback process in each rotation, and regular town hall meetings with residents and the program director.

We asked several of our experts in resident education to share their thoughts on these challenges in creating confident, independent, and competent surgeons. We focus primarily in this edition on matters relating to feedback and graduated autonomy, with the full discussion on related topics available online.

It is always helpful to start with some history for perspective. Can you please share your thoughts on feedback, specifically how it is given and taken? And how have these concepts changed as the residency program has gone through changes?

DR. HERNDON: I was thinking about this last night, and it’s very interesting that when I was a resident (from 1965-1970), there was no formal evaluation at all of residents. Instead, we had evaluations on an ongoing basis, every day. So how did that occur? Well, it occurred with critical comments made by the faculty when you were making rounds, in front of patients, in the hallways. It occurred at morning reports in medicine and surgery and all the specialties where you would be subjected to critical comments about your evaluation of the patient or how you handled the patient the night before. It occurred in the operating room directly. In fact, you might even be asked to leave the operating room on occasion if the surgeon didn’t like your performance. So it was a very direct, almost assaultive kind of evaluation that occurred on a daily basis. I don’t recall ever sitting down with the chairman of the department or the residency program director or any faculty really and discussing my performance. So in my period of 40 some odd years in this field, I have seen a total cycle change to what we have today where there are required evaluations by the faculty, by the program director at least twice yearly, with as much feedback as possible. This is a very good development over time.

But with that, I still see some issues that are concerning. Are the evaluations really appropriate and valid for the resident; are they really helpful for the resident to understand what he or she needs to improve? I find that, in my experience, faculty have been a little reluctant to spend the time needed to fill these evaluations out, a little concerned about confrontation and making

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negative comments, even though the goal is to be helpful and constructive. I also think that in my experience over the years, attendings have been reluctant to put comments in writing on paper, which is very necessary for a program director to be able to get a sense of the resident's position in the program, how well they are doing, and importantly try to help them get them on track if they're not already. It's supposed to be an iterative and helpful process for the residents.

So how can staff provide more constructive criticism beyond, "You did a great job, you showed up on time"? What is the most appropriate way for a resident to solicit feedback?

DR. BAE: It was fascinating to me hearing that earlier perspective because it sounds like feedback as Dr. Herndon had described it was daily and very iterative, and yet, perhaps, there was no pause or time to reflect to give summative performance evaluations. And maybe the pendulum has swung to the other end now where a lot of it is summative, and perhaps we have opportunities to make it more daily and more iterative. It's a tough balance to strike, and I know Dr. Dyer, you've worked on that a lot.

DR. DYER: I think one way to break this code, and part of what was happening in the days of Dr. Herndon's training that is happening less now, is to explicitly focus on the growing and developing autonomy of the trainee. So that's a little bit of what's been lost in the goal of residency to make our trainees autonomous at the end. And we have a little disconnect between the societal expectation and understanding of what training is, and what the actual role of a trainee is in a patient's care. Training has become more public but in some ways less well understood and less well accepted. There is a real difficulty to take on the role of an autonomous surgeon while still a trainee. And this has become something that's almost forbidden. Not that our trainees are ever left alone or unsupervised, not that medical care is ever compromised, but there is no way to make a trainee autonomous and competent at the end of their training without letting them actually provide care, without giving them, in a measured graduated way, increasing roles of competence and autonomy.

When you take autonomy out of the picture as the goal and instead you make up competencies where somebody's tried in an artificial way to define what it is that makes a person able to be autonomous but doesn't test the thing itself (which is autonomy and the capacity to do the work we do) then I think something's really been lost. To me, that explains part of the swing from iterative and formative evaluation on a daily basis to summative evaluation that seems a lot more artificial.

So if you're operating with somebody in 1966 and you say "go ahead and do this," and the resident can't do it, then it's pretty clear to both of you right then; "I asked you to do this, and you just can't." It's formative, it's immediate. And the reason it works is because the goal for both of you is at the end of three more years to be autonomous. If we can keep our eye on that goal, I think it makes it much easier.

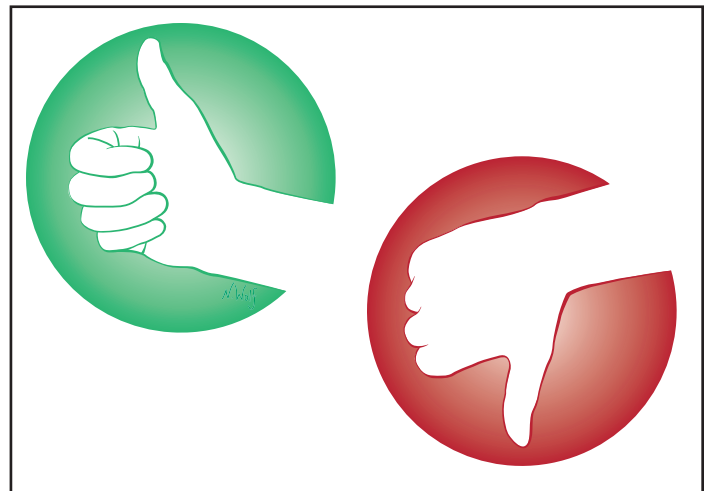
That's one thing we are innovating with here at our program to try to make it the explicit goal of our training. And there's a very simple evaluation system that I know Rameez is familiar

with from working with me as a resident where each and every operation, and each and every interaction with a patient, in real time, is evaluated on a scale of autonomy. How autonomous do I judge you to be based on how you are today? In real time that feedback is given back to residents, and I think that's going to help a great deal.

DR. DIGIOVANNI: Dr. Herndon, it was great to hear your perspective based on a multi-decade experience. Historically, I agree we as faculty have not been very good at providing feedback. I also think our residents could be better at soliciting feedback, so the solution probably involves a bit of increased effort and creativity on both sides. In my observations over the years, feedback has been provided in a generally extemporaneous and unpredictable nature, but I firmly believe that providing constructive, formative feedback can be better taught to and learned by faculty; it doesn't come as an "innate talent" to most of us and is really an art form that requires additional education for us as teachers—just like residents require additional education to become fine surgeons. It is certainly a two-way street, with residents needing to take charge of their learning and improvement, but also attendings dedicated to guiding and structuring this progress.

Further, faculty have to be open-minded about giving feedback and residents must be open-minded about receiving it. There was an article in the *Journal of Graduate Medical Education* a couple years back basically showing that, collectively, at the resident level, we may not be consistent nor accurate with self-assessment.⁸ The findings of this article really influenced me, and what I've done with residents since then is start our assessment exchange with "Well, how do you think you're doing?" Sometimes the answers I get are quite surprising, but more often they're right on and very insightful, and they help me provide better feedback to someone who is already "primed" to receive it.

In addition to doing this on the spot in the OR, the clinic, or after a conference and the like, however, I think there also needs to be structured, protected, built in time for providing this one on one feedback—private time where you can really engage in honest, supportive exchange of strengths and opportunities for improvement. We must do a better job building this



time into our program since all of us are so remarkably busy. Otherwise it will never occur—to the detriment of everyone. Residencies need to also be reminded to engage in regular feedback. All of us want to give our residents input and advice on how to improve, and certainly all of our residents want this feedback, but we're just so busy. I think residents crave honest formalized feedback, but it must be presented in neither a judgmental nor an embarrassing format. If it is going to be “documented” as part of their residency progress, then of course it must also be confidential and balanced. And residents need to feel a responsibility to seek out this feedback. The process absolutely cannot be passive on either end, because that ultimately will be ineffectual. It also cannot be public or confrontational, since that kind of feedback always ends up regressing to the mean—everyone gets rated as “good” so as to hurt no feelings, but again then no one wins or gets any better. We surely need to spend more time making sure feedback happens and does so in a healthy environment, because as Dr. Dyer mentioned, it is an important part of the growth of any resident.

DR. HERNDON: You know I've found that residents really have a pretty good self assessment of themselves. It's the rare resident that really doesn't understand the problems that he or she is having. That's really rare in my experience anyway. They're pretty sharp about where their strengths and weaknesses lie.

DR. DIGIOVANNI: In my estimation we definitely need to find a better way to provide feedback, as well as have feedback received, in ways that are personalized but not vindictive because that would really help. I sometimes find, for example, that less seasoned attendings are a little more reticent to provide overtly honest feedback, and similarly I find that more junior residents are also a little more shy about wanting to really hear what their weaknesses might be “in the flesh,” so to speak. This is another dynamic we should be working on.

Dr. DiGiovanni, do you think there are differences in feedback strategies between a smaller program or a larger program as you have experienced both in the past few years?

DR. DIGIOVANNI: In terms of the processes surrounding feedback, not really. There are certainly some other significant differences between larger and smaller programs though. Large programs like this one seem to be able to offer tremendous breadth of opportunity or exposure and learning potential. But those types of advantages also come with their own set of unique challenges too. It's not just the sheer size of the program, but it's also the number of residents, it's the number of attendings, it's the number of hospitals, it's the size of the city and how spread out everything is, etc... All of these things add layers of complexity in trying to capitalize on all there is to offer in such a program. Let's for a minute look at you just having to work so hard simply to get us all in the same room at the same time! Right? That wasn't easy, and it's a microcosm of what we're talking about. We need to work on better ways to identify how to facilitate things

like this meeting. You know it's funny what I've noticed about, and I'm sure these guys have too, our national meetings these days. They don't ask you three months ahead of time if you can participate in something. They ask you a year and a half ahead of time! Because they have learned that:

- A. the odds of you saying yes are much higher, and
- B. the odds of you building it in your schedule and then actually following through go up immensely

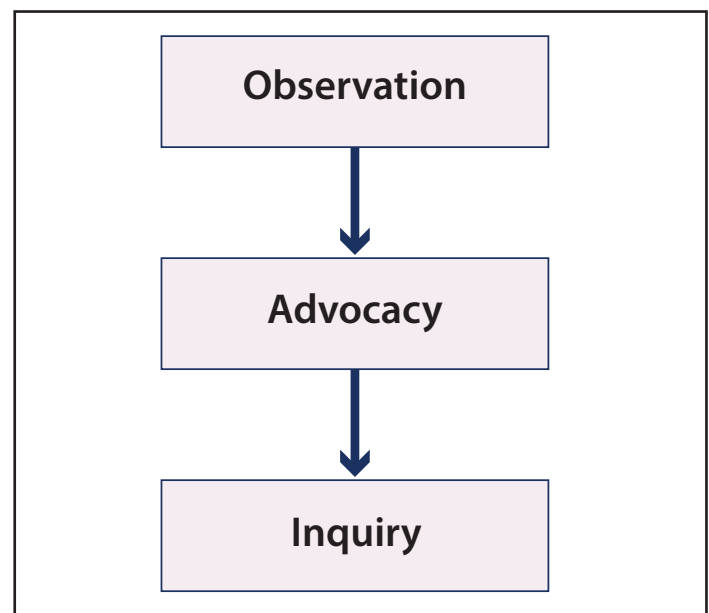
So we also need to think about such creative solutions in terms of how we're getting everybody together to educate.

If a resident feels they are not having that measured, graduated increase in surgical autonomy over time, what are some strategies for self-assessment? How about frank communication with the attending to match expectations?

DR. BAE: I think one concept that is really important to emphasize is that feedback can be a very constructive and objective thing. It's not, “Dr. Dyer is giving me feedback as I'm a resident in his operating room.” This is not a Dr. Dyer versus Don. This is Dr. Dyer and Don standing together and looking at a skill or a clinical condition. We want to be aligned and facing the same direction instead of at each other.

DR. DYER: With a shared goal.

DR. BAE: Correct. There are lots of different ways to do it. One process that I like that's easy for me to remember is observation-advocacy-inquiry.^{9,10} Make an objective observation. Make sure that it's clear we are advocating for each other and for the patient. Then ask a question. So Dr. Dyer might say to me “Don, I noticed that you put the stitch through the artery. I know you're a caring provider, and I know you didn't mean to do that. Help me understand why did that happen.” So all of a sudden, it ceases to become Dr. Dyer



versus Don. It becomes objective; he's advocating for me and he's asking a question. To flip it around a little bit, that can happen in a very positive way and should be a two-way thing as well. So if I'm a resident in the operating room, I'm looking for more feedback, and I can in some sense use the same recipe. "Dr. Dyer, I noticed that you got that screw in on the first shot, and I want to be as good a surgeon some day as you are hopefully. Help me understand how did you do that. Help me be better." So that can be a positive way to do the same "observation-advocacy-inquiry" method.

Getting back to your question about getting more feedback, I think there are "hardware" things-- structural or systematic things-- and then there's "software". We can mostly control the hardware. We can try to make sure the goals of a rotation, or the goals of a day, or the goals of an operation are explicit. And therefore if they're explicit, and we're aligned in those goals, we can be much more purposeful not only in how we care for the patient but how we provide the feedback. Communication obviously is key, and I think Dr. DiGiovanni alluded to that; sometimes it's not so easy. We're busy. There are a lot of different priorities. We've got to take care of the patient. There are real world considerations in terms of productivity, duty hours, external circumstances. So I think if there are purposeful goals that are explicit, and there is good communication, at least those are ... the systematic things we may be able to control to nudge people in the direction of a little bit more feedback.

DR. HERNDON: Dr. Bae, your last comment I think is very appropriate and that is the fact that what you're describing is a very time consuming process. And surgeons are busy; residents are busy. They don't seem to have the time for what you just described. You're a very organized guy. I know that; I've seen you work. But a lot of people aren't as organized as you. And somehow the faculty have to have that commitment to take the time to do all that you describe.

I also wouldn't like to see myself in a situation where I comment to the resident "I wish you hadn't put that suture through the artery." I would hope that that could be stopped before that happened. But I also know that because what you described doesn't always happen, sometimes residents are expected to do more than they're really prepared to do. So, for instance, you ask the resident "go ahead and put those pedicle screws in," and they've never done it before, it's a little tough on that resident on the other side of the table. Somehow the faculty member has to take the time, like you say, to make sure they understand what the resident is capable of doing, not capable of doing, what their experience is, and then be on the other side of the table helping them when they do their first pedicle screw.

DR. BAE: And that's where purposeful goals that are shared and pre-communication or post-communication can be helpful. You may choose to make a simple intervention. I'm going to try: "Dr. Dyer, I'm your resident today. I'm really hoping to get some feedback because I want to be better, and you're a great teacher. When we call for the Vicryl stitch for the subdermal, can we try asking each other, or giving each other, one piece of feedback?" Build something that's a little bit systematized. It's not going to take extra time. In between cases that's usually kind of a relatively down time where people are

talking about the Red Sox or listening to music anyway. Small steps I think can take us there.

DR. HERNDON: Good suggestion.

DR. DYER: So I'll tell you one simple thing that we've done, and it relates to the answer I gave before about making a very structured pathway toward autonomy. I'm going to give a little brief description of what this theory is, but it works very well, and we're already putting it into practice.

This was developed by a person named Jay Zwischenberger who is a thoracic surgeon in Kentucky. It defines arbitrarily, but in a way that I think you'll find is very intuitive, the pathway to autonomy into four stages.¹¹

STAGE 1 *Watch me operate (i.e. "show and tell")*

You're a medical student watching or retracting, and I am the attending filling the air with words as we do the surgery. I'm explaining what the operation is, and how it works. You ask questions, and I might give you small tasks to do, but basically you're watching me operate.

STAGE 2 *Total help*

I am operating with your hands. I don't expect, anticipate or require you to be at all autonomous, but you're going to learn by the muscle memory of performing the operation where I say cut on the dotted line.

STAGE 3 *Partial help*

The onus and the responsibility of the operation really shifts from the operating surgeon to the learning surgeon, and the trainee is directing the operation. They are filling the air with words, explaining their plan as it evolves. "Here's the next thing I'm going to do. Here's the next risk that I know is coming up. Here's my plan for avoiding this artery or that other structure of interest." And you remain at stage 3 with the surgeon assisting you as long as you continue to show that you're on top of it and really prepared.

STAGE 4 *Supervision only*

I'm required by rules to be in the operating room, I'm not gone; I'm scrubbed. But now I'm the medical student, and to the extent that it's safe for that patient at that time, you the trainee are taking me through the operation. And if the operation grinds to a halt, it's because you weren't able to keep it moving, and that's as close as we can get to true autonomy, that moment that's going to be like the day after residency when there's nobody else there telling you what to do or drawing a dotted line for you to cut on.

What I do now is to pre-negotiate with every resident, every time, what level is this case for him or her. I call it leveling the case. Since it's a pretty intuitive scale, people understand it pretty easily. You can say beforehand "I think this is a level 3. Okay. So show me your plan. Explain what it is." And then as we progress through the operation, the resident stays in level 3 by continuing to give me the comfort that this patient is being well cared for and that they are capable of that level of autonomy. When they hit a snag, because we've pre-negotiated, it takes a bit of the sting out of the change in level. So we look at each other across the table and say "You know, this doesn't seem to be a level 3 anymore. Why do you think that is?" And it doesn't take a long time, but we have a framework instantly that is based not on you stink, or you don't care, or you don't care about me, or I'm impatient. The framework is we defined autonomy and your pathway to it, and there's an obstacle. In a very objective way, we can say what is that obstacle and work around it. It may be that I take the operation back to level 2 for a little while, but the resident then knows that they'll get it back. They have a confidence that this isn't a punishment, and they're not in the doghouse for the rest of the day, but we're just working through the plan we agreed on in advance.

The last thing, and I remember this from my own training, is that it takes away the kind of parallel mental effort that the resident takes wondering whether they are exhibiting the right level of autonomy. Because if you don't make it explicit, the trainee just doesn't know how much control they should be taking of the operation. And so in their head, they're thinking "If I call for the next instrument, make the next move, am I showing that I'm competent, prepared, ready to go? Or am I scaring the heck out of this guy because he doesn't expect me to do these things?" But if you've made it explicit in advance, then all of that processing power is free to learn instead of to worry about whether you're at the right level of autonomy or not.

DR. BAE: I think it's a great approach. I can't speak to complex foot and ankle or a lot of adult procedures. I know in the pediatric hand world, that approach works very well. And you can unpack each case. There's incision; there's dissection; there's fixation; there's closure. Each of those things can be leveled in a different way using the Zwischenberger stages.

DR. DIGIOVANNI: I feel autonomy should be proportionate to demonstrated independence, and independence is generally proportionate to exposure and experience. It is my observation, however, that exposure and experience have become proportionate to mandated duty hours. These are interrelated...yet we as a society continue to expect the same throughput from our graduating residents despite, as compared to say twenty years ago, far less structured "input." In other words, in order to reach a similar level of mastery today, our current residents must really extend their learning beyond the duty hour limits. Part of that onus falls on us, and part of it falls on our residents. There are multiple factors,

many of which Dr. Dyer just elucidated, that go into autonomy.

But what I think we all need to remember is that having autonomy conferred is not an automatic right; autonomy is an earned privilege. All residents want to become autonomous, and the best and most successful ones continually work towards that goal (with the help of a dedicated faculty). Obviously all residents proceed at different rates, and similarly I think all attendings differ with respect to their particular comfort levels regarding autonomy with any particular procedure. This logically equates to expecting a transfer of autonomy at vastly different rates when situations differ. A balance must be struck here, but everyone needs to accept that being afforded autonomy is like a marriage; it requires ongoing work on both sides of the table to be most fruitful and doesn't just "happen."

DR. HERNDON: Dr. Dyer, what you described to me was the first I've heard of that. It's a very refreshing, innovative look at how to handle this problem other than just turning certain types of patients over to the residents to operate on unsupervised like it was in my day. So are you teaching this to all the faculty? Is this something that's going on in the program now?

DR. DYER: I am. It's our next big faculty development initiative.

DR. HERNDON: I think that's terrific. Also I'd like to ask you, to be a bit of a devil's advocate here, how are you handling the informed consent issue with the patient regarding these levels of autonomy you're giving the resident?

DR. DYER: So that's something I've thought a lot about, particularly in recent months given some of the things that have been in the news. It's always been my personal requirement and policy to be very up front and explicit with my own patients about the role of trainees in the operation. So I say: "This is an operation that I can't do alone, and this trainee is the best partner for me you could ask for. They are the product of a super competitive national search for the very best doctors who are specializing in orthopaedic surgery in the country, and I'm proud to have this person working with me. Here's going to be their role. Here's what we're going to do. Meet them, shake their hand, if you have questions, but understand that I can't do this operation alone." So I try to involve the patient as much as possible. And it's the very rare patient who says they are not comfortable with that, as long as it's explained.

DR. DIGIOVANNI: And in fact in most cases, nobody is really doing an operation alone. So if you were somewhere else, regardless of the surgeon you might be talking to, he or she is still going to have some kind of help. But here, where we are, no doubt the help one has is great!

DR. DYER: That's right.

DR. HERNDON: The key point you made is you actually introduce the patient to the resident. I think that's essential.

DR. DYER: And I introduce them as a partner, not as “the help” that you don’t know who this is. It’s important to do it this way.

From the residents’ perspective, I know this system removes the uncertainty. It creates an objective measure that you know as a resident: “This is on me. This is the homework I have to do, and if I do it, this is the relationship.” And the fluidity during the case is incredibly helpful. It’s not a negotiation. It’s, “Well, if you’re doing this, this is how we proceed. If not, this is how we proceed.”

DR. HERNDON: It’s nice to see the attending and the resident not fighting over the knife, so to speak.

Right. The rules are laid out. There’s no question mark, so that helps in removing the negotiation piece and instead focusing on whatever is needed to gradually move the trainee over time to Stage 4 in all cases.

For a video and transcript of the full, extended discussion, including further topics on resident autonomy and structural innovations to enable time for teaching, go to the journal’s website at:

<http://www.orthojournalhms.org/17/roundtable.html>

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