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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Neurosurgical Management of ICH: Making Sense of ENRICH, SWITCH, STICH and MISTIE

Announcer:
Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

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Dr. Patel:
Good afternoon. I'm going to follow David and just try and discuss or make sense of some of the surgical trials that have been going on, going back almost to the to 2005 when STICH I was first published. And the reason for perhaps considering this is that we all know or can read the effects of the treatment that is to do surgery or not, on outcome. But actually, there's a real process that goes into the decision to randomize that affects this pathway and picking which patients might benefit from surgery, I think, is still quite nuanced and a problem. And it's nuanced because we, perhaps, as neurosurgeons who make decisions on these have very different views on how or which patients should be randomized at trials or should actually get surgery. And so perhaps, although I'm not - I can't speak for every neurosurgeon, I thought I'd start by just telling you what I think when I go about making a decision of thinking about taking a clot out or not in someone.

I suppose the overriding feature that I think about is whether there is a mass effect, and some of that relates to essentially the size of the hematoma. And I'm thinking that the effects that I have are really to remove the mass effect, rather than to prevent secondary injury that might be associated with a smaller hematoma. I think also when I think about smaller hematomas, I also feel that actually the trajectory of the patient is much better, and that the likelihood of recovery is much better. And as a result, the effects of my surgical treatments have to be that much safer to make sure that there is a real benefit to those patients that are perhaps naturally going to get better. And I suppose that that's why I try and limit my thoughts about who I'm going to operate on to those people that have a big hematoma in whom I'm uncertain as to what their trajectory is going to be, or feel that their trajectory actually, from the natural history, is poor.

So the second thing I will think about when I get phoned at 2:00 in the morning is whether the patient is in coma or not. And this is probably a bit nuanced still, particularly with the results of the ENRICH trial, but if someone presents to me in coma, particularly given the cohort of patients that I'm being asked to treat, that's median age of about 70, it likely signifies that there's a bit more of a global process, a global brain injury process going on, rather than a focal injury specifically, and perhaps may also involve injury to the brainstem, which is, in my view, in this group of people, not reversible. And then once I've made then - got the thought in my head that I'm going to operate, then I'm going to get on and do it. I'm not going to wait to do it.

Of course, on top of those sort of very surgical thoughts, clearly, the patient is front and center of this. And prior to proceeding to the operating theater, of course, you need to do the end of the bed test to make sure that the person that you're going to operate on is going to tolerate not only the surgery but the likely extended period of time in the intensive care.

So with those thoughts in mind, how does that then relate to the various trials that have gone on? So the first thing to notice, really, is that all the trials are looking at pretty sizable clots, and essentially fits in with how I think about which patients should be selected for treatment with regard to surgery. I think if you look at the methods of how surgery is being performed now, we're paying much more

attention to the brain, we're paying much more attention to preserving eloquent tissue, and there is a real move now towards very specialist, minimally invasive approaches to removing the clot, paying attention to the eloquence of the brain.

And I'd also say that with that nuance of improvements in the method of surgery, we're really paying attention to if we're going to take the clot out, we actually do. So STICH I and II didn't really have that as an end point in their trials, in that they never really looked at if you had been randomized to surgery, had surgery, well, actually, was it effective surgery? Now that the trials, both MISTIE and ENRICH which have been published more recently, really do have that quality control measure in their studies. And that quality control measures seems to fall in at reducing your clot volume to at least less than 15 mL.

And at this point, I'll probably just concentrate a little bit on ENRICH which has been published last month, I think. So the first thing I'd say is that it speaks to the fact that decision-making is still nuanced. Look at how many patients they screened and how many they randomized. So you really still have to think about which patients are going to benefit from surgery. They, as I said, had a median clot size of 54, with a range of 30 to 80, so they're already thinking that the patient has to have a big clot before they're enrolled and likely to benefit from surgery. The design was such that it was an enrichment trial design, that's essentially, I understand, that you know, as the trial progresses, you try and back the horse that's going to win. And in this case, they'd split their - they'd recruited all patients with an ICH, and then having seen some effects in lobar intracerebral hemorrhages, enriched their study population with lobar intracerebral hemorrhages, specifically. And that's why you have this sort of 68/32 split in a deep versus lobar in their study. And essentially, this was really the landmark study that was presented here at the ESOC last year and showed that outcomes with surgery were significantly better.

And if you look at the study in a little bit more detail, that significant improvement in outcome is particularly in those patients that have a lobar intracerebral hemorrhage. And so at the end of ENRICH, we get to a point where, if you've got a sizable clot, and by sizable it's over 30 mL, and if it's in a lobar location, then you're more likely to benefit from surgery or not.

And so when I replay this in my mind, I end up with the fact that, you know, I'm really still uncertain. I don't think that there is enough data out there with regard to performing surgery on small ICHs. I think that if you have a large ICH and you have a lobar hemorrhage, that's the ideal candidate for surgery. And ENRICH has

shown that there is benefit. I think for deep ICH that is large, I think the decision-making is still nuanced in that I think ENRICH perhaps, if had continued longer, might have been able to show some benefit, and so I'm uncertain in that area still, and we make decisions on a case-by-case basis, as we always have.

Thankfully, there are a number of trials that are going to address some of the questions that I've been asking, small volume clots, all minimally invasive. And if you're going to miss an ESOC, perhaps miss next year, because in 2027 or 2028 they're going to all report. And that's very exciting.

I'll just let you read that very quickly.

Dr. Gibler:
Any discussion Adrian, a colleague at Manchester, I'm sure you have great –

Dr. Patel:
Nothing too difficult now Adrian.

Dr. Parry-Jones:
I was going to ask you a question, which is that, let's imagine I have a patient with a 40-mL bleed with a GCS of 11, and I ring the neurosurgeon on call, a response we quite often get, and others might recognize this, is that don't do anything now, if they deteriorate, rescan them, and we'll think about it then. So what do you think about that approach of waiting for deterioration? And does the evidence help us then?

Dr. Patel:
Yeah, and so I think that that's why ENRICH has been really good. Because, you know, even if you ignore the nuance of decision-making for ICH removal, at least there is - when you knock on the door, the knock has to be taken seriously and before, because of the fact that none of the trials have shown benefit beyond reducing death. That knock has, you know, been safely shut in the knowledge that the evidence isn't in the favor of surgery. I think that's where ENRICH is really important. And that patient may not be the ideal candidate for surgery. That decision is still to be made, but at least ENRICH opens that door for a better discussion now.

Dr. Steiner:
Can I ask a question, please?

Dr. Gibler:
Oh yes, please, Dr. Steiner.

Dr. Steiner:
So how important is the surgical result? I mean, is it just suck a little bit of blood out, or –

Dr. Patel:
Yeah, so I think that this is an important question. So when you start talking about 40-mL clots, you know, you really can't leave – just suck a little bit and come out. There needs to be a scan that you can present the next morning, saying that you've done what you've set out to do. I remember being, you know, during my training, if I'd taken out an ICH in the night, I knew that the next day that scan would be presented in a meeting like this, and so I knew that I had to take that out. So I think it's important that if you're going to operate, you should aim to remove all the clot. I am mindful that I'm heading towards eloquent tissue, especially deep. I'm mindful that I'm dealing with a fragile population. So I aim for good, not perfection.

The idea about the 15 mL, I'm not sure as a specific cutoff, and that being completely related to good outcome. And some of that is because I think that no matter how good I am at operating or how much blood I leave behind, as long as it's not the same size that we started off with. There has been damage to the brain that is irreversible. And so for whether it's 16 mL, 15 mL, 10 mL, I don't know, as long as it's not in the right place.

Dr. Gibler:
Excellent. Thank you very much.

Announcer:
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