Davinci Xi Instruments and Docking

(0:00 - 0:37)

Hey guys, welcome back to another Surgical Tech Tips. This is the third video of this robotic series, or the DaVinci Xi series, and I'm going to be going over docking the robot to the patient and also inserting instruments and, you know, other little manoeuvre things that you need to to know and realise when you're a surgical tech working in the robot room. So you can see we already have one, two, three trocars already in our patient here.

(0:37 - 2:58)

Our middle trocar is going to be our camera and we're just going to have two arms. So we're not going to be using all of the arms. I'm only going to be using and docking two of them because those are the supplies I have.

Now I hope you can see this right here. There is a green laser on the patient's body right now and the nurse is going to manoeuvre that green laser so the marks are directly over the camera trocar. Once the nurse is done positioning these laser lines over the camera trocar itself, the sterile person can then start to move the move the boom itself and angle it so it's going to be looking at the target anatomy.

So let's say we're going to be working on something in the upper chest and our target anatomy is directly above here. So I'm moving the y-axis directly looking at our target anatomy and our x-axis is going in line with the line of our trocars across the patient's body. All right now so docking the robot.

I like to always dock the camera first. I think it's important to always dock the camera first because you never want to go in blind with with an instrument. Never want to go in blind with an instrument.

So I'm going to angle the arm specific to you know this this angle of that I have on the trocar. We have a little latch here and this latch unlocks the the docking portion of the inside of this this arm. So with my index finger I'm going to be pushing on the button behind the arm and with my thumb I'm pulling this lever back.

That will enable me to manoeuvre this arm right in and let go. And now it's locked in place it's ready to go. I forgot to show you this is a disposable piece and this hooks directly into the top of your trocar to enable you to obviously add insufflation directly down this trocar itself.

(2:59 - 4:24)

Now this is an eight trocar so we have a five eight trocar head attached to this trocar. This is a 12 head and what's nice about the the 12 head is that they also come with these these downsizers that you can put directly down the trocar and make it an eight. We use those a lot in

thoracics when we're stapling.

You know it's it's nice we usually have two 12s and you have the ability to use an instrument an eight millimetre instrument and then when you know the surgeon's ready to staple you just take this sleeve out slide the 12 millimetre stapler down there do your stapling slide this back in and you can dock a regular instrument again. So now that we have our caps in place and our camera trocar is docked and ready to go we are going to insert our camera itself. This is a super expensive camera.

The XI camera is really really nice for one reason you hold down the light button it turns off turns on and it automatically white balances itself. There's no calibration or anything that you have to do in that instance like you did have to do with the SI. No need for any of that it's just kind of plug it in and go.

(4:25 - 5:01)

So I'm going to be inserting the camera now we're going back to the top button and when you are inserting instruments or cameras you don't have to hold the button it's just a one tap and you can see the light on top of the arm is blinking blue that means you have control of this arm not the surgeon at the console. So we can then start inserting the camera and we're watching the scope as we insert the camera. Now let's say our target anatomy is going to be that blue pen.

(5:01 - 6:15)

I'm going to hit the button one more time to make the colours go solid blue. Now this instrument cannot be moved and it's in control of of the surgeon if he or she wants to start controlling it. Now I'm going to go ahead and hit this button one more time because I want you guys to look at the screen.

The screen has these green hash marks on here similar to the laser lines that we saw initially when we were docking this robot. It's all for target anatomy so you have the option to look at the laser lines and kind of figure out where you want your target anatomy to go and move it yourself manually but you can also just do it specifically through this automated system that they have built in and we're going to be holding on there's three buttons on the back of the camera. The furthest left is the circle button.

I'm going to hold down this circle button and also hold the trocar. It's going to count down and it's going to move all of the arms into the optimum position. You can't tell me what to do.

(6:16 - 7:11)

It's going to move it all into the optimum position for that surgery. Now let's go ahead and dock the second arm and insert an instrument. Now I always find it important.

I've seen people you know when they dock their originally dock their trocar their trocar is it may look like it's sitting further inside so that's why it's important to always dock the camera first. You bring this camera around so you can look specifically at this trocar and there we can see the trocar on the screen. It's a little bit too far in and the reason I know that is because this big fat black line needs to be just inside just inside the patient's tissue.

(7:12 - 9:35)

When that big fat black line is just inside the patient's tissue that black line represents the the pivot point that the trocar is going to be moving around. As you can see the trocar is moving around a single pivot point and it's right there at that black line the big fat black line. So now that we have this optimally in with depth we are going to bring our camera around and insert an instrument.

I personally do a lot of thoracic cases and you know the heart is right there when you're inserting instruments so it can be a very very scary thing to do and I mean it's scary for even abdominal and pelvic cases too. You can easily perforate a bowel accidentally or a liver you know inserting an instrument which are all things that I've heard have been done you know in the OR. So again we're taking the head of the instrument placing it into the trocar and locking it in place.

It's going to go through its thing we hit the button and you can gently start putting it inserting it into the patient until it's right near its target anatomy. Click it one more time click it one more time and now the surgeon has control of both of those instruments the camera and the instrument itself. All right let's say the surgeon's working working working and he decides he or she decides that you know they need a different instrument and that happens all the time.

You're constantly swapping out instruments in a robotic case. So to swap out an instrument we have two little grey buttons on the side of the of the instrument here. We are going to look at the screen first off and make sure that the surgeon does not have any tissue or or you know the instrument is not clamped on any tissue specifically.

It's on its own not not going to harm anything by taking out this instrument. So we look everything looks okay you push both of the buttons in and pull the instrument directly out. Now what's nice about this is that we've already had an instrument placed in this trocar.

(9:35 - 15:29)

So when you place an instrument back in this same trocar notice that the colour has changed to green and it's blinking green. That means it has memory. So it the instrument was inserted far enough through the trocar and into the patient's abdomen that it can go directly back to that exact same position without you having to manoeuvre the arm in any specific way.

So we'll push it in constantly watching the screen as we push it in and it's placed it is now solid blue and the and the surgeon can use it. Now I've moved the instrument inside the abdomen so

I can show you guys what it's like when you don't have memory with an instrument. If you notice the instrument is all the way backed into the trocar and when I take this instrument out it doesn't have any memory.

It's a solid blue colour on this arm. So when you put this instrument back in it's not going to have any memory. Now you can try and just go in blindly and keep it at that exact same angle that it was at and you can do that but it's dangerous.

It's very dangerous. So I highly suggest taking your camera and and moving it back so you can see the trocar. But another reason I did this is because I wanted to show you guys if you look at the top corner of the screen we have kind of like a yellow and yellow and black hashes and what's happening is that those hash marks are specifically telling you where your instrument is going to be coming in when you're inserting it into the body.

See if move it up it's going down moving it back down it's going up and it'll insert in that area. So I wanted to do one little last segment of kind of tips and tricks that you might use in the in the robot room. You'll notice when I inserted the camera initially I just I put it in place and and slid it into the body.

We have this huge long cord that's coming off of the camera and it's it's pretty cumbersome. So a trick that I was taught was if you wrap the cord around the camera itself or the shaft of the camera and then insert it in place you have this cord that wraps around your instrument and it's kind of out of your way and out of this this field. Another tip I have for you is for the insufflation.

Obviously when you start the case you're putting the camera port in first so that's where the insufflation is going to be going but after you start docking all of these arms it's important to remember to take that insufflation off of the camera trocar and I'll tell you why. There's been multiple times in the past where we haven't realised why the camera is fogging up so much. You put defogger on it you try warm sailing you try everything and it's still fogging up.

You want to know why? It's because your insufflation is going through that camera port. Save yourself the hassle and save your surgeon the hassle and just move that insufflation over to one of the ancillary ports so that co2 isn't constantly blowing on the tip of that of that camera and fogging it up. Another tip I have that I've seen some people do it's it's it's kind of bad practise to to take the bipolar or monopolar cord you dock your instrument and then go to put that cord in while the instrument is already docked.

That can that can that could be an accident waiting to happen. You can accidentally see that I can I can still push this in without even touching the button so you could accidentally you know it takes a lot to push it in but you just want to be safe. So take the instrument out hook up your bipolar or monopolar cord and then place the instrument back in.

It's just a safer bet and lastly I just want to do one more tip on the docking procedure. If you're

going to be docking under direct vision of the camera itself I highly suggest that you place the camera first and then dock one arm under direct vision insert the instrument move over to your other side dock the other arm and insert the instrument. If you try and dock all of the arms at the same time your camera itself is just not going to have the movement that you need to look around to be able to see you know the the opening of those trocars.

All right I think that is it. We have done a lot of robot talking and robot stuff and there's still a lot more information about it. It's it's crazy there's there's a lot of stuff a lot of stuff specific to specialities and procedures and you know different instruments and staplers and blah blah blah blah blah blah blah there's a lot but I hope you found these robotic xi videos helpful and as always thanks for the comments and the shares and please leave a comment below in any of these robot videos if you might have missed if I might have missed something or you would like to see something in in some future videos.

Thanks for watching guys. I'll see you again.