

1 strike that.

2 Did you examine the swabs?

3 A Examined a smear generated from the swab.

4 Q Okay. And based on your training and  
5 experience and examining that smear, did you have an  
6 opinion as to whether or not Rita Cobb had engaged in  
7 sexual intercourse?

8 A Yes. On the swab, in addition to the normal  
9 cells that are present in the vaginal tract, there also  
10 were sperm head intermixed with those cells. That would  
11 say she had sex prior to death.

12 Q Okay. Are you able to say -- or give an  
13 estimate as to how soon prior to death she had sex?

14 A No. When you have a body that is starting to  
15 undergo decomposition, in addition to the normal body  
16 tissues, any internal tissue will also undergo  
17 decomposition. If she had not been undergoing  
18 decomposition, you could make an estimate over the  
19 status of the sperm and the number to give you a rough  
20 hint at how long they might have been present.

21 The sooner they were present, the more intact  
22 they'll be and the greater the number. Over time, they  
23 start deteriorating and become fewer. With her being in  
24 a moderate degree of decomposition, the fact that the  
25 sperm had lost their tails, normal sperm is composed of  
26 an oblong head with a long tail. After intercourse,  
27 those are intact for a day or two. Then their tails  
28 basically start breaking off.

1           In this case, most of the sperms had the tails  
2 absent, but since she was in decomposition, we couldn't  
3 use that to state whether it was immediately prior to  
4 death or at sometime prior to death.

5           Q     Okay. Then as far as these sperm go, do you  
6 have an estimate or did you estimate how much sperm you  
7 actually saw?

8           A     Just a semi quantitative. We make an estimate,  
9 are they easy to find, are there just huge numbers, or  
10 are they difficult to find. In this case, they were  
11 relatively easy to find. I just said there were  
12 moderate numbers. That's very, very imprecise.

13          Q     As far as when you did your examination of the  
14 smear, that was sometime around looks like 1:00 on  
15 September 24th of 1985?

16          A     Yes.

17          Q     Hypothetically, if there was another smear or  
18 another swab that was taken from the victim on  
19 September 23rd of 1985, so let's say a day prior,  
20 24 hours prior, would the number of sperm that you find,  
21 would that decrease?

22          A     It would be expected -- in that 24 hours, it  
23 would be expected to because the vaginal tract contains  
24 a large number of bacteria, and the bacteria, amongst  
25 other things, will break down any cells that are in  
26 their vicinity.

27                 On the smear that we produce at the time of the  
28 autopsy, there were a large number of bacteria in the

1 background. I would anticipate there would be some  
2 digestion of the sperm by bacteria.

3 Q As far as the sperm is concerned, if the victim  
4 were hypothetically alive and the victim were out and  
5 about and walking around and doing daily activities,  
6 what effect would that have on the amount of sperm that  
7 you would find?

8 A There would be a progressive decrease in the  
9 density of the sperm in the vaginal vault over time. So  
10 immediately post-coitus, they tend to be fairly  
11 numerous. As you do go about your daily activities with  
12 gravity, the semen would be expelled and with that quite  
13 a few of the sperm. In addition, the bacteria would be  
14 digesting them. You expect to see a decrease in number  
15 over time, and a smaller percentage that would be  
16 intact.

17 Q How quick in time are we talking about as far  
18 as the decrease goes?

19 A It's dependent upon factors, such as, is the  
20 person lying down, up and running, did they use a  
21 douche, did they take a shower. There's a variety of  
22 factors that can impact the rate at which these  
23 decrease. You have to factor in what is or is not.

24 Q Assuming somebody did engage in sexual  
25 intercourse and did go about daily activities, would you  
26 expect to see some sort of seminal fluid or sperm in the  
27 woman's underwear?

28 A Commonly there are.

1 Q Okay. As far as any other external  
2 observations that you made, were there any additional  
3 ones or was that pretty much it?

4 A Those were the -- the significant findings.

5 Q Okay. Going to the internal examination, is  
6 that the next step that you took in your autopsy of  
7 Rita Cobb?

8 A Yes, it was.

9 Q What did you find in your internal examination  
10 of the body?

11 A The primary abnormality on the internal  
12 examination were a variety of injuries that were related  
13 to deep tissues of the neck. So when we have any  
14 suspicion that there may have been a ligature or manual  
15 strangulation, we do a careful dissection of tissues in  
16 the neck, pulling the skin up and going layer by layer  
17 examining the muscles and getting down into the voicebox  
18 or larynx.

19 Then we examine all of the -- there's a variety  
20 of structures made of either bone or cartilage that are  
21 components of the larynx or hold the larynx and tongue  
22 in place and that are used for speaking. If there is a  
23 strangulation, these very, very commonly are -- there  
24 will be injuries to these structures.

25 Q Okay. And one of the structures is called the  
26 hyoid?

27 A Yes. The hyoid is a bone up under the neck,  
28 and it is essentially the anchor of your tongue, and it

1 connects your tongue to the edges of the upper portion  
2 of your voicebox. It holds everything together so when  
3 you talk, it resonates.

4 It's composed of bone, which in adults is  
5 usually fairly hard and so, as a consequence, it becomes  
6 brittle. If there is a forceful injury, it is very,  
7 very common for that to fracture.

8 Q Then as far as the thyroid cartilage, is that  
9 another portion of the neck?

10 A Yeah. The voicebox itself is composed of two  
11 plates of cartilage that are called thyroid cartilage.  
12 At the top, they have a finger extension that looks like  
13 a horn -- so I assume it's a Latin word for horn is  
14 cornu. You have that. The superior cornu at the top.  
15 Then you have two that -- one on each side that point  
16 downwards or the inferior cornu.

17 On the examination of this body, we found that  
18 there were fractures on both sides of the hyoid bone.  
19 In addition, on the left side of the voicebox, there was  
20 a fracture both of the upper cornu and the lower cornu.

21 Directly beneath the voicebox itself, where you  
22 go from the voicebox to your trachea, the main windpipe,  
23 there's another ring of cartilage called the cricoid.  
24 On the left side, there was a fracture of the cricoid  
25 cartilage.

26 Q I'm going to show you what's been marked  
27 Exhibit 20 and 19, 20 being the one on top of the  
28 screen.

1           Looking at Exhibits 20 and 19, could you  
2 explain to the jury what's depicted in those exhibits?

3           (Whereupon Exhibit 20 was marked  
4           for identification.)

5           THE WITNESS: Yes. 20, which is the upper of  
6 the images, shows the hyoid bone. If this was in the  
7 body, the front of the neck would be towards the  
8 screen. So on each side, you would have these little  
9 tiny extensions that are called the cornu of the hyoid  
10 bone. The one that is on, when looking at the screen,  
11 the left side, which is the right side in the body,  
12 there is a -- you can see that it suddenly tilts off  
13 to the inner aspect about one-third or two-thirds the  
14 way down. That is a fracture of the right cornu.

15           When you look at the other side, you see a  
16 little fragment that's very, very sharply pointed  
17 sticking upward, and then there's a -- the remainder of  
18 the arm is also towards the inside. That's a fracture  
19 on the left side of the hyoid bone. So there's  
20 fractures on both sides of that bone.

21 BY MR. THOMAS:

22           Q       Then looking at Exhibit 19, what does that  
23 depict?

24           (Whereupon Exhibit 19 was marked  
25           for identification.)

26           THE WITNESS: That is depicting the actual  
27 larynx. That's the bottom portion of the larynx. If  
28 I may use the pointer, it is right between my thumbs

1 you can see the edge of bone. That's the cricoid  
2 cartilage. That's where it has -- normally should be  
3 a smooth continuous piece. The fact that we can see  
4 the edge means that it was fractured. So there is a  
5 fracture of the cricoid cartilage.

6 Q As far as the hyoid's concerned, does that bone  
7 move up and down on your neck a little?

8 A It usually stays firmly because it's anchored  
9 to the tongue, just very, very minimally. So it's  
10 usually fairly fixed as is the larynx.

11 Q As far as the amount of pressure you would have  
12 to put on the neck in order to break the hyoid and break  
13 the cricoid, how much pressure would you have to put?

14 A The amount of pounds per square inch, I don't  
15 know. The primary importance when we examine remains is  
16 that typically these -- if you're talking about intact  
17 bodies as opposed to skeletal remains, because they are  
18 stabilized by a large number of muscles and tendons,  
19 they are reasonably protected. It takes external force  
20 to break them. So this is one of the most common of the  
21 abnormalities we find in strangulation.

22 Whether it's with an external object like a  
23 coat hanger or it's done with your hands, in most  
24 instances where a person is strangled because of the  
25 struggling that typically accompanies the strangulation,  
26 there is variable force. So these findings are very,  
27 very strongly associated with strangulation as a method  
28 of death.

1           Q     Then as far as the rest of your internal  
2 examination, did you notice anything else that was  
3 unusual?

4           A     The remainder -- other than the moderate to  
5 advanced state of putrefaction, we did not identify any  
6 other significant injuries to either, for instance, the  
7 head did not find any internal injuries. The other only  
8 item of any note, she had a common benign tumor on her  
9 uterus.

10          Q     And then once you do this internal examination,  
11 what's the next step that you do?

12          A     The next step is really two-fold. One is we  
13 take, as I mentioned, samples of tissue as we examine  
14 the organs. Then we will look at those microscopically.  
15 In addition, while we're doing the dissection, there are  
16 a variety of tissues that are saved so we can do  
17 toxicological examination.

18                   Normally what is collected is blood, stomach  
19 contents, urine, portion of the liver, and a portion of  
20 kidneys. In this case because of the degree of  
21 putrefaction, the blood had all dissolved. There was no  
22 blood to collect. So the -- and there was no urine in  
23 the bladder. The only materials that were collected in  
24 this case was stomach contents, the bile portion of the  
25 liver, and a portion of the kidney.

26          Q     As far as the stomach contents in this case,  
27 what was collected specifically?

28          A     In this case, the material that is in the



1 stomach was just mucus. There were no food contents,  
2 just mucus. Normally the stomach because it has acid,  
3 it has to have something protected. So it makes a sort  
4 of material that's very, very slippery, mucus, that  
5 protects the stomach from its own digestion. We  
6 collected that.

7 The routine is to first do what's called a  
8 screen where you examine by a method that will pick up  
9 large quantities of drugs. See if there's a drug  
10 present. Then identify the drug. Then, if there is, a  
11 more-detailed examination. In this case, the only  
12 materials that were found in the toxicologic examination  
13 were breakdown products of putrefaction. There were no  
14 other drugs that were detected during that process.  
15 Only the liver and kidney were examined. The stomach  
16 contents were not examined since there were no drugs  
17 detected in the two organs.

18 Q Then as far as testing for alcohol, was that  
19 done in this particular case?

20 A No. The problem with testing for alcohol is  
21 that the same bacteria that are causing the putrefaction  
22 generate their own alcohol. Once the body becomes  
23 moderately decomposed, there's no way to detect alcohol.  
24 There's no way of distinguishing whether that was  
25 something that was ingested or whether that was created  
26 by the bacteria themselves.

27 Q Okay. So that's the reason that no alcohol  
28 tests were performed?

1           A     And there was no blood. For alcohol -- alcohol  
2 levels to have meaning, we have to know what it is that  
3 the tissues are exposed to. That's in the blood. Since  
4 there was no blood, there was no way of knowing what  
5 these concentrations would have been at the tissue  
6 level.

7           Q     Then as far as manner of death and cause of  
8 death, could you tell the difference between manner of  
9 death and cause of death?

10          A     Yes. Cause of death is defined as the  
11 pathological process or injury that led to demise.  
12 That's a diagnosis. The manner of death is a  
13 categorization. In most jurisdictions, most deaths can  
14 be; natural, you can have an accident, you can have  
15 suicide, which is death at your own hands; or you can  
16 have a homicide, which is death at the hands of another.  
17 Then there are some cases which with a complete  
18 examination and investigation you can't determine.  
19 Those are undetermined.

20          Q     In this case, did you have an opinion based on  
21 your training and experience as to what the manner of  
22 death was?

23          A     Yes, ligature. Due to the inability of a  
24 person to do this ligature on themselves and the  
25 associated internal injuries, which would indicate a  
26 struggle, this was classified as a homicide.

27          Q     Then did you have an opinion as to what the  
28 cause of death was in this case?

1           A     Yes.  It was strangulation with incomplete  
2 evidence to determine whether it was purely ligature  
3 strangulation or whether there might have been a  
4 component manual strangulation.  Manual strangulation is  
5 defined as using the hands rather than an external  
6 device.

7           Q     So your opinion is that somebody could have  
8 manually strangled the victim in this case and used the  
9 ligature to strangle her some more?

10          A     That's possible.

11          Q     And you kind of talked about it in the manner  
12 of death, how it would be difficult for somebody to  
13 strangle themselves.

14                    Could you tell us the process in which somebody  
15 would die from strangulation?

16          A     Strangulation is a method of death that really  
17 can -- that condition can lead to death by several  
18 different methods.  Depending on what's being used for  
19 strangulation, whether it's the hands, the arm, external  
20 device, you can either compress the blood supply that's  
21 going to the brain, you can compress the blood supply  
22 that's coming back from the brain, or you can collapse  
23 the airways.  You can suffocate the person by closing  
24 the airway.  You can cut off -- which would take several  
25 minutes.  You can collapse the arteries that are taking  
26 the blood to the brain, in which case the person could  
27 actually become unconscious in less than a minute and be  
28 dead within five minutes, or more commonly is primarily

1 the impact on the ability of the blood to drain from the  
2 brain. If the blood cannot drain from the brain, then  
3 the blood going into the brain can't move through, so it  
4 doesn't get oxygen. In that case, you will go  
5 unconscious. It will take a few minutes longer than if  
6 you collapse the arteries. Once you have gone  
7 unconscious, then it's about five minutes before you're  
8 dead.

9 Q So as far as the unconsciousness, you said that  
10 if they're able to cut off circulation to the brain, it  
11 can happen within a minute?

12 A Within half a minute to a minute. If you can  
13 collapse both of the arteries, very, very rapid.

14 Q If you can't do that, how long does it take for  
15 them to go unconscious?

16 A It typically is described as taking several  
17 minutes. It takes that long for the blood to build up  
18 in the brain so it can no longer have new, fresh blood  
19 coming in.

20 Q When you say several minutes, are we talking  
21 two or three minutes or nine to ten minutes?

22 A It depends. Complications with strangulation  
23 is, unless the person is incapacitated by a condition  
24 such as being under the influence of drugs, they're  
25 going to almost always fight. During the struggle, you  
26 may have collapse of arteries and change position and it  
27 may release. So it could go out for even longer than  
28 just five or six minutes.

1           The length of struggle can be very, very  
2 difficult to predict. It's a -- depending on how  
3 quickly and how rapidly one of the critical functions,  
4 whether it's arterial supply, venous drainage or the  
5 air supply is cut off.

6           Q     As far as the struggle is concerned, I just got  
7 to thinking about something else, as far as the hyoid  
8 being fractured and the cricoid being fractured, does  
9 that indicate there was a sign of a struggle?

10          A     That's -- that's part of -- this is part of  
11 what makes those so important because the primary -- the  
12 most similar cause of death to a strangulation is  
13 hanging. Since a hanging person does not struggle, they  
14 rarely ever have injuries to the neck. If you have a  
15 person whose dead with a ligature, the presence of these  
16 injuries that are related to the struggle is crucial for  
17 making a distinction between those two methods of death.

18          Q     Once a person goes unconscious, whether it be  
19 because the blood's cut off to their brain or their  
20 airways are cut off, how long after they go unconscious  
21 do they actually end up dying?

22          A     Typically, once the blood flow to the brain is  
23 cut off, you have less than five minutes before you're  
24 dead. Even if you recover, you're almost always left  
25 with significant, permanent brain injury, vegetative  
26 state. After five minutes, the possibility of the  
27 victim surviving goes down to infinitesimal.

28          Q     As far as if we're dealing with minutes,

1 overall it takes about five to ten minutes for someone  
2 to strangle someone else?

3 A That's the best estimate.

4 Q Okay. And during that five to ten minutes,  
5 does the pressure have to be constant or can it be  
6 intermittent when you're strangling them, like, you let  
7 go a little, strangle some more?

8 A It can be intermittent. That's part of the  
9 struggle. Once the person is unconscious, then there's  
10 a period where they no longer struggle, so the pressure  
11 can be released and reapplied without having the --  
12 having the additional injuries.

13 Q Okay. Then as far as once the person is  
14 unconscious, at that point they can no longer fight or  
15 struggle, so the person's basically left with being able  
16 to do anything they want during that time period?

17 A That's correct.

18 Q Okay. As far as the examination that you did,  
19 are you familiar with a term called petechiae?

20 A Yes.

21 Q Okay. Because of the decomposition in this  
22 case, were you able to see that in this case?

23 A No. That's one of the changes that happens is  
24 if you have this blockage of the veins draining the  
25 blood from the neck, it's very common for blood vessels  
26 to get totally engorged with blood, and as part of the  
27 loss of oxygen that accompanies that, it's very common  
28 to have the little tiny blood vessels rupture, and you

1 get little tiny bleeds. That's what petechiae is.  
2 They're small, little. Pinpoint bleeds.

3 One of the common findings with asphyxia deaths  
4 and strangulation is one -- asphyxial death is death due  
5 to lack of oxygen. One of the common findings is the  
6 presence of petechiae. They most easily are  
7 identifiable in the whites of the eye.

8 In this examination we did on this person, the  
9 degree of decomposition had advanced to the point to  
10 where the whites of the eyes were totally obliterated by  
11 the presence of putrefaction gases. The consequence is  
12 we looked for petechiae but did not see them, but the  
13 whites of the eyes were pretty much obliterated by the  
14 postmortem changes.

15 MR. THOMAS: Okay. I don't have anything  
16 further.

17 THE COURT: Mr. Sanders, you may inquire.

18 MR. SANDERS: Thank you, your Honor.

19 **CROSS-EXAMINATION**

20 BY MR. SANDERS:

21 Q Good afternoon.

22 A Good afternoon.

23 Q I don't have a lot of questions, but I have a  
24 few. There was a couple of questions that the  
25 prosecutor asked you that I want to follow up on. He  
26 was asking questions about sex and the potential of a  
27 sexual assault.

28 I believe you said you couldn't say with any

1       certainty how long before death the victim in this case  
2       had sex; is that correct?

3           A       That's correct.

4           Q       He asked a second hypothetical. He said,  
5       suppose someone was wearing underpants after sex, would  
6       you find semen in the underpants, and I believe your  
7       exact words were, commonly there are.

8                   I assume the second half of that would be, but  
9       not necessarily?

10          A       That's correct.

11          Q       I'm sorry. I apologize. I spoke at the same  
12       time you did. What was your answer?

13          A       My answer, yes, the other part of that  
14       statement would be but not always.

15          Q       Okay. As you examined the body, we looked at  
16       photographs that have blood and things all over.

17                   You washed that blood away; correct?

18          A       We -- by the time we had completed the  
19       examination, we did the initial examination with the  
20       body as it was transported to the morgue. Once we have  
21       collected trace evidence, once we have made that initial  
22       examination to see if there's a pattern, sometimes blood  
23       is part of your trace evidence, once we have completed  
24       that, then the routine is to wash the body to determine  
25       whether there are any additional changes that might be  
26       obscured by the presence of blood or the fluids that may  
27       be leaking out of the body.

28          Q       Right. So you take the -- I think you have a



1 little hose that you use?

2 A What we were using then was a low-pressure  
3 hose. The typical thing was -- it's sort of similar to  
4 what you have in the kitchen except it's lower pressure.  
5 It's not going to spray as much. You push the water,  
6 see what washes away, and lightly rub if you needed to  
7 let it wash away gently.

8 Q And so you -- you washed away the materials  
9 that were on the outside of the skin; correct?

10 A Yes.

11 Q Then you could examine more closely the skin to  
12 look for external injuries?

13 A Correct.

14 Q You did that?

15 A Yes.

16 Q And after you examined the entire body, I  
17 believe you said, other than the neck, the only external  
18 injury you found was there was some ecchymosis on the  
19 inside of the right knee?

20 A Yes.

21 Q And ecchymosis is another word for a bruise?

22 A That's correct.

23 Q Okay. Now, I know that sometimes you fellows  
24 have a way to determine the age of bruises.

25 Did you have that opportunity in this case?

26 A When the body is undergoing putrefactive  
27 decomposition, the methods that might be used become  
28 unpredictable because the aging of bruises, though it

1 can -- it essentially can only be done in a roughly  
2 crude assessment because the breakdown -- what you're  
3 looking for is the breakdown -- what a bruise is just  
4 means nothing more than blood has seeped into the  
5 tissues. So we're looking at the age of it. We look at  
6 how much has the blood basically been metabolized and  
7 broken down.

8 The problem with a decomposed body is those  
9 same processes are undergoing for the entire body. We  
10 typically do not do any specific examinations to try to  
11 break them down because the inability to differentiate  
12 breakdown of a bruise that may have been several days  
13 old versus breakdown of the blood because the body was  
14 undergoing putrefaction.

15 Q Would it be correct then to say that you cannot  
16 tell with any degree of medical certainty if those  
17 bruises were received Friday, Thursday, Wednesday, or  
18 sometime before --

19 A That's correct.

20 Q -- the death of Ms. Cobb?

21 A That's correct.

22 Q Okay. By the way, I notice that in your  
23 description of bruises, you indicated that they were a  
24 different color from blue to tan to green and sometimes  
25 I know that the color of a bruise -- bruises sometimes  
26 morphosize (sic) in their coloration.

27 A That's part of the -- this is part of the  
28 limitations of examination of a decomposing body is that

1 the normal color variations that we might use for saying  
2 that this bruise is older than another bruise because  
3 they go through a progression change. They start off  
4 blue, then green, then brown, then yellow. The problem  
5 is that the bacteria can alter the rate at which the  
6 color changes occur.

7 If you look at the description of one of the  
8 changes that happened with decomposition is you get  
9 leakage of blood from the normal blood vessels called  
10 reticularis. The reticularis varied from red to green.  
11 That variation is all related to how the blood is broken  
12 down in this case due to the presence of bacteria.

13 Q Thank you, sir.

14 A So --

15 Q I'm sorry.

16 A So the variations in color cannot be reliably  
17 distinguished between whether this was because they were  
18 different ages or it was a reflection of varying degrees  
19 of decomposition.

20 Q Thank you. Excuse me just a moment, please.  
21 When you looked at the -- the -- well, I've lost the  
22 word.

23 What did we call the discoloration of the body  
24 from the settling of blood?

25 A The liver mortis.

26 Q Thank you. In this case, did you find any  
27 evidence of liver mortis on any areas besides the back  
28 as if the body had laid in a different position

1 postmortem?

2 A All of the liver mortis changes was on the  
3 dependent portions of the body. So we didn't have  
4 evidence that there had been a movement of the body  
5 after, say, specifically the liver mortis would become  
6 fixed after several hours. Didn't see any evidence that  
7 the body had been moved after -- the body was in the  
8 position that it was found within an hour or two of  
9 death.

10 MR. SANDERS: Thank you, sir. No further  
11 questions on cross-examination, your Honor.

12 THE COURT: Redirect.

13 MR. THOMAS: Thank you, your Honor.

14 **REDIRECT EXAMINATION**

15 BY MR. THOMAS:

16 Q Mr. Sanders asked you about the certainty on  
17 sexual assault cases as far as when sex took place.

18 Do you recall that line of questioning?

19 A Yes.

20 Q Okay. In this particular case, you have a  
21 death; correct?

22 A (No audible response).

23 Q Is that yes?

24 A Yes.

25 Q And as far as the sex was concerned, based on  
26 your training and experience and based on what you  
27 termed a moderate amount of sperm, can you say that this  
28 occurred a week prior to death?