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Interview with Dr. John R. Taylor, Anatomic Pathologist and coauthor of

The prepuce: specialized mucosa of the penis and its loss to circumcision

By

B: Firstly, Dr. Taylor, what exactly is a pathologist?

T: A pathologist is a medical doctor who studies tissues and organs, and disease processes in tissues and organs. That study can be from surgery or autopsies. Strictly that's an anatomic pathologist in North America.

B: Your article is fairly ground-breaking. It's the first I've seen of its kind. What was your motivation to study the prepuce, that's the foreskin, right?

T: I only did it for my own interest, my family, initially, you know. I had a bunch of young children who were threatened by the procedure. As you can probably tell, I'm English in origin, and [circumcision] is rather uncommon in Britain, even in my age group. That paper was really aimed at the public. I think people are intelligent, and if things are written in plain straightforward language they can understand them. They don't need high-powered doctors to interpret things for them. We've had too much of that already.

B: Besides showing people the article, what would you tell them about the foreskin, if somebody were asking you to perform a circumcision, say?

T: The prepuce is a structure in its own right and it has to be given a value before you make any decision. You'd have to say to them: Look, this is specialized skin and mucous membrane, it's built very much like the lips, or the vulva in the female. It's a junction between skin and the inner lining. It contains highly specialized nerve endings, which are only found in a few places in the body, and we only find this sort of tissue in areas where it has to perform specialized function, and this specialized function has to do with sex. This is sexual tissue, and there's no way you can avoid the issue. Most people look at the child and the prepuce, and say that, well, the prepuce isn't much use for a child. Well the prepuce isn't designed for a child, it's designed for an adult and you can't look at it in childish terms.

B: You wrote in your paper that the foreskin is "rich in nerves" and that it "appears to be an important part of the overall sensory mechanism." What do you think this means to a circumcised adult male?

T: I showed two things. One is that the quality of tissue removed is quite impressive, and the second is the quantity. There is quite extensive loss of tissue, a fair area. So you've got two things missing, one is a lot of skin and the other is a high quality, skin and mucosa. The structure—it's a little difficult to be sure, of course, as it's the first study of its type and I have to use my own impressions—but apparently it is specialized sexual mucosa. We know that because it has specialized nerve endings in it. These are arranged in a certain way, probably triggered during intercourse. I think most mammals have some mechanism for triggering sexual reflexes—ejaculation reflexes—and in humans, this, I think, happens to be it. I've done the anatomy. From the anatomy I can deduce, I can second guess what happens. It doesn't take a rocket scientist to do that. The rest of it, the physiology of it hasn't been done. So, you can only estimate what might happen, either during sexual

intercourse or masturbation or whatever, and I think anyone's guess is as good as mine. But in circumcision, all that tissue is lost. You lose approximately half the skin of the penis, skin and mucosa. More importantly, you lose all the specialized mucosa. This has in it specialized nerve endings called genital nerve endings or Meissner nerve endings. They're all ripped off and the only ones remaining are the ones in the frenum, which is the bit underneath, and those on the surface of the glans. How important the glans is in compensating, I don't know. The frenum is not much in contact in heterosexual intercourse.

B: Would you say that circumcision detracts from your sex life, is that what you're saying, or is that what you're not saying?

T: Yes I do. I think if you remove the vast bulk of the software from your penis, then you're going to suffer. If you lose all your specialized sensory nerve endings, and then the mechanism, the skin, and the rest of the penis that makes these nerve endings work, during sexual intercourse, or whatever, then you'll suffer. Obviously people who are circumcised don't miss what they've never had. It's like someone who was born blind, I guess. Now whether that's because they compensate, or do it in some different way, I don't know. No one knows.

B: One of the problems with the article I suppose, that I'm having, is that it says that the nerve endings in this frenar band or ridged band are specialized, but it doesn't say what they're specialized for exactly. Can you illuminate exactly what the frenar band is specialized for?

T: They're specialized for detecting movement, they're a tactile corpuscle for detecting movement—they're rounded in shape. The only reasonable explanation is that they're part of a reflex mechanism.

B: I also wanted to ask you about the frenulum. I have a bit of confusion about the frenulum and frenar band. Is the band under the penis made of the same specialized tissue?

T: The frenar band forms a loop that's continuous with the frenulum. It's all one continuous structure.

B: When you're talking about the specialized nerve endings, was the frenulum included in your analysis?

T: Yes, we did look at the frenulum. The special nerves continue into the frenulum. It's the same thing all the way around—it just loops around, it doesn't just stop with the frenulum. You see a lot of people think that it's only the frenulum that's of any interest, but if you follow it along, you'll see the thing loops around and widens out and forms distinct bands and ridges. The major finding of the whole article is that of the frenar band and its innervation and its localization. It's not just a vague area that includes all the prepuce or all the penis or anything else, it's just a very strict, anatomically distinct area. This is a new finding.

B: Is the actual part of the inner foreskin that is closer to the base of the glans, as sensitive?

T: No. It's got hardly any specialized nerve endings. There's a big saddle shaped area which is pale, smooth mucosa, then you hit the ridged area. The only part of the inner lining of the prepuce that contains specialized nerve endings is the part I call the ridged band, which is about half a centimeter wide just near the tip of the prepuce. That always goes in circumcision. That's the part that's continuous with the endosurface [underside] with the frenum. The frenulum sweeps up and around on both sides and moves into the frenar band. That's always near the tip of the [flaccid] penis. You can't miss it.

B: So the ridged area would be the frenulum along the bottom and then it would do a ring around the tip.

T: Right.

B: And its the ring around the tip always that's lost.

T: Always. And that's the important part. That's the bit that, when the prepuce is retracted, that bit folds back and becomes everted on the shaft of the penis, and you see what happens then is that transfers the sensory bits from the tip of the penis nearer to the base of the penis. Without that there'd be no incentive for penetration. You see the skin of the penis and the scrotum have muscles in them, and so they form a fairly rigid muscular sheath that stabilizes the sensory parts. The penis is two things. It's got hardware and software, this is the way I put it. The software is skin and mucosa with the nerve endings in it. The hardware is the erectile part. All the hardware does, is to bring one mucosa into contact with another mucosa—in heterosexual intercourse I'm talking about. The important thing about the penis is its upper surface, called the dorsal surface—most of the sensory bits are on the front of your body. The penis is no exception, so the top of the penis is the important bit. During intercourse the penis presses up against the vulva, mainly, and the labia minoris. An erection brings this mucosa into contact with the female counterparts. This is the way the penis is designed, and what it does is to bring one inner genital fold into contact with another inner genital fold. Its the labia minoris in the female, and the hood of the clitoris. In the male it's the inner part of the prepuce, it's the part of the lining of the prepuce which I've called the ridged band in that article, also called the frenar band which we've mentioned.

B: So the purpose is to bring these two surfaces in contact.

T: That's my theory. It seems as good as any. It explains the physical findings. I don't say that one part of the penis is more important than any other. The glans does one thing, then there's a blank area, then there's the prepuce with its highly specialized nerve endings, which are rather similar to the ones in the glans. Then there's the skin of the shaft, that does another thing, and the scrotal skin, that does another thing. They're all important in sex. They all come together to produce ejaculation response. But I can only speak for uncircumcised men. I don't know how it happens in the circumcised. Its something we're looking into at the moment. I hope we will come up with an approximation. But there's very little written on the exact mechanism. I don't know if anyone's actually looked. Masters and Johnson did a study, many many years ago. Nothing very specific, it doesn't go into detail.

B: Perhaps an interesting study would be the difference in physiology between the circumcised glans and the uncircumcised glans, if you can use that expression. The one that apparently dries out, and becomes different...

T: No. I think that's a red herring. It's often been said again that the prepuce protects the glans and covers it, but that isn't true. What happens is in fact the glans protects the prepuce. The inner surface of the prepuce is very delicate and without the glans it would be destroyed in next to no time. The glans can manage quite well without a covering, as circumcised people know. They do very well. The glans itself, as I say in the paper, isn't very sensitive. You can't feel it if you touch it. You stick a pin in it, you can't feel it. You can put heat on it, and you can't feel the heat or cold. To stimulate the glans you've got to sort of rub it, you've got to give it a kick, you know, which can be a bit irritating. So, the glans itself is not all that sensitive, so whether it's slightly drier than normal or got another layer of keratin on it is almost immaterial. It's not going to change its underlying physiology and nerves.

B: Whereas the inner foreskin is not that insensitive.

T: The inner foreskin is a structure with specialized nerve endings that is stimulated by movement. They're not stimulated by light touch either, but if in intercourse or masturbation you move it, it will give a strong sexual sensation. But it's tied in with the rest of the skin of the prepuce and the skin of the shaft. The whole mechanism of the penis is different in circumcised versus uncircumcised...I suspect that in circumcised people the glans does have a greater level of importance than in non-circumcised men. But I'm only guessing. I suspect in an uncircumcised male it's [the glans is] of

relatively little importance. I think the glans is important. I don't say that one is more important than the other, but all the emphasis has been put on the glans as the be all and end all in sex. What I'm saying in this article is, Watch out, It isn't, and certainly not for uncircumcised men.

B: So we've discussed the quality of tissue removed. Did you look at the different methods of circumcision and the different kinds of tissue that each method removed? Is there a difference in quantity between the different methods?

T: No they all do the same thing, they all remove about the equivalent of the length of the penis from the baby. I showed a picture in the article. They're pretty brutal. And they don't just remove the prepuce, the mucosa and skin but they remove a good slice of the shaft skin as well. So that the whole thing is shortened. You see what happens then, in an erection, is the whole thing becomes rather tight and smooth. In an uncircumcised person the shaft skin remains pretty wrinkly. Highly frictional, a grabby sort of surface. In a circumcised person, it's pretty much smooth and [has] different mechanics. A lot of circumcised people complain, I've heard—I've seen this in newsletters—because sometimes the scrotal skin gets pulled up onto the shaft of the penis, and that can be awkward really, you don't want hairs up there...it could be a little bit problematic. And some circumcisions, especially Jewish circumcisions, are quite tight. They remove all the mucosa, leaving very little free material on the penis so that during an erection quite a lot of the scrotal skin is dragged up so that it's a bit hairy and it's sort of awkward. All circumcisions are fairly tight, physiologically. No physician wants to leave an untidy circumcision—the patients come back again. They come back and complain, and then the circumcision has to be redone. Parents wanting circumcision done usually want something that looks tidy, that is a smooth finish. Now you'll find the scar halfway down the penis but this doesn't seem to bother them, in a baby. There are many good books on the market on child rearing, and generally they pan circumcision nowadays, but they'll say, well, circumcision only removes about half a centimeter of skin, or it only removes the tip of the penis, but even so we don't recommend it. OK I don't mind that they don't recommend it, but they're wrong about the quantity. They remove far more tissue from a child's penis than they do in an adult circumcision in terms of proportion.

B: Did you find that some circumcisions removed the frenulum and some didn't?

T: I think it's generally accepted that lots of circumcisions remove part of the frenulum—if you look at the frenulum on a circumcised penis, it's quite short and stubby very often—you can see where it was lopped off. Different practitioners have different means of doing it. I was reading an article recently in The British Journal of Urology, actually—after mine—that outlined the different ways of doing circumcision, and it said there that there is no way you can spare the frenar band, and you can't miss the end of the frenulum—they run together, there's no clear line between the frenulum and the frenar band. I guess that's the point I was trying to make. You have to understand that that was the first article of its type and I didn't have much to go on. It's a baseline study.

B: In some instances the scar is not halfway down the penis, it's closer to the glans, is it not? And if it's far down the shaft, as opposed to being closer to the glans, wouldn't it be leaving more of the inner foreskin?

T: No, no, they take off the mucosa. They can leave a bit more of the mucosa, but the mucosa that they leave doesn't contain any of the specialized nerve endings at all.

B: You can't miss it with any kind of circumcision?

T: No. And all these specialized nerve endings go, and all you've got left is the specialized nerve endings in the glans. Circumcision removes all the specialized contact tissue [all the tissue that is] in contact during sexual intercourse.

B: You talk about ejaculatory mechanism being reflex, but that's not necessarily going to be indicative of how the man feels pleasure, it's just going to be indicative of how his ejaculation is triggered.

T: Well, I think the two are closely intertwined. I'm not too familiar with the literature on the exact mechanism of ejaculation responses in sexual intercourse. I don't know that there's much been written about it, on what does what and when, precisely, so a lot of it's sheer guess work. Everyone's willing to come up with an opinion as to what triggers a response, but no-one has actually done the work on it. No one has actually taken a group of subjects, circumcised and uncircumcised, and said, "lets study this, see exactly what happens". I think you'd have to talk to a group of people who are circumcised and a group of people who are not circumcised, and find out for yourself what the differences are.

B: That kind of study is almost impossible to do, it seems.

T: Well, it needs a specialized unit to do it. It needs a Human Sexuality Unit to take it on and to do it properly, but they don't do this sort of work, and that's the disappointment. There are lots of human sexuality departments in universities but they don't do this nitty gritty groundwork that needs to be done, and largely it's a matter of taboo. They're as hemmed down by taboo as the rest of the population. It's very difficult for them to talk about these things, for some reason.

B: Is this why you think that this conclusion took so long to be shown, that the foreskin is sensitive tissue, and we shouldn't, maybe, cut it off?

T: Yes. It's not a nice area to study. You know, nice people don't study this sort of thing. I'm a pathologist—a medical doctor, not a physician, [i.e. does not have patients]—and I don't talk to people about their sex lives. I'm just a private person and it's a bit painful for me to talk about it, too. It's not something that I talk about every day, unless someone's really interested and they're sensible people, but it's not something that I'd go yelling about, because it involves words and terms that people find fairly offensive. But sometimes, if you're a journalist or are writing about it, you've got to do it. But you have to use plain language that people understand.

B: It is interesting that the issues around male circumcision are still taboo, whereas it seems the issues around female circumcision have been widely discussed and largely resolved in our society, at least from a legal point of view. Female circumcision is seen as child abuse in our society.

T: The amount of tissue they remove from a male penis, is almost exactly the amount they remove in female circumcision, and they're removing almost exactly the same sort of thing in female circumcision.

B: Not infibulation, but circumcision.

T: No, just circumcision in the female, which is removing the foreskin of the clitoris and the labia. Not removing the female glans, the clitoris. It's very difficult though to take the foreskin of the clitoris off without removing the clitoris in the female. But ignoring the clitoris, there's quite a lot of tissue lost in a female circumcision. There's almost exactly the same amount of tissue lost as in a male circumcision. There's really very little difference, except for the remaining glans in the male. But here we are bringing in laws at the moment—there's one in front of Parliament—ranting and raving about female circumcision. Not a word about male circumcision. So it's become a political issue as well. I feel rather deeply about it, and that what's good for the goose is also good for the gander, so to speak. You shouldn't use different yardsticks to look at males and females.

B: I just want to back up one moment. Are you saying the foreskin that is removed is equivalent to the removal of the prepuce of the female clitoris, does that include the labia?

T: Yes, that includes the labia minoris.

B: So you would say that circumcision of the male is equivalent to denuding the female of the labia and her clitoral hood.

T: Yes. It's exactly the same tissue. It's embryologically the identical tissue. It developmentally comes from what we call the endogenital fold. It's derived from the urethral part and erupts from around the top of the penis in the male. In the female it's not closed in, of course, but it still erupts from around the top. It's still the same specialized mucosa. I have a friend in Wisconsin who is doing work on this in the female. He's doing the other part of the study.

B: Is he directly comparing the two?

T: He's checking my work.

B: Can you tell me about some of the response you've had from this research?

T: Very positive. There are three Internet web sites with the paper on it, actually, and they say the response is generally very good, and people are interested. Most of the people I've talked to who are interested in circumcision—like NOCIRC in California, a doctor from Seattle, or Intact—there are several anti-circumcision groups—they like the work [Taylor's research] very much. They can relate to it, they know it. Of course, many of them have their own agendas. Most of them are gay groups, and they're interested in penises and intact and non-intact. They take an interest in these things.

B: Maybe because they compare notes.

T: They do, and they see far more of other people's penises than we ever do, and even than I do as a pathologist. I'm told that a gay circumcised male in California knows perfectly well what an uncircumcised penis looks like, in all states of activity. They compare notes and find out that they're different.

B: In terms of sensitivity.

T: In terms of sensitivity, whether it's intercourse or masturbation or whatever it is. They find that they're quite different, then they start asking questions, and they get into reconstruction. They get the ball rolling, so to speak. I know they're deadly interested in it. And then they've got a lot of experience, believe me.

B: Your next area of research might be restoration, Dr. Taylor.

T: No, I'm told to forget it, actually. I think it's a loser, if you've lost that specialized mucosa, you know, just stretching the rest of the skin doesn't compensate.

B: You have mentioned the legal aspects. You have considered the legal applications, I suppose, of your research.

T: There are lawyers who are interested in it, you know. Tort lawyers in the States, and they are beginning to get damages.

B: What kind of damages are they looking at?

T: Fairly modest ones at the moment. It's a tremendously interesting area, because it's got sociological overtones, as well, as to why people do things, and why they don't. It's got this ethical thing about it too. We're an ethical society, but this is one hell of a big gap in our outlook, I think. I can't understand why people still do it when they've been told that it's of no medical benefit at all and they haven't even looked at it. Now I've got no objection if Jewish people want to do it. I do

recognize that in Jews it's a significant sacrifice. But I'm not Jewish and the people I'm talking to are not Jewish. I don't wish to upset—you've got to be very careful with the Jewish community of course, and rightly so, because there is a reason for it there, it's part of their religion, and I think they're making a real sacrifice. But Christians don't see it as a particular sacrifice, they just see it as a sort of a fashion statement. And that's awful I think. Especially if they know what they were removing. But until men get up and start shrieking about it, nothing's going to happen.

B: I think you're about to hear some shrieks. It seems probable, taking into account your research, that circumcision is decreasing the sensitivity of the penis, that this is negatively affecting a man's sex life. How do you think that your research affects the ethics of performing routine infant circumcision today?

T: I think it affects it very much—that's the key issue, the ethics. There's lots said about ethics in various papers, and how terrible it is to do experiments on people, to give them drugs, to do surgical procedures, without full consent. Here you're doing a surgical procedure without informing patients as to what is going to happen to them. Doctors doing this procedure don't know what they're removing. They haven't studied it, they're guessing. And this is the tragedy. This is real 18th Century surgery. It's done without informed consent. The parents don't know. It's done without the informed consent of either the relatives or the child, and it's a useless operation. Irrespective of [studies showing] the pros and cons for AIDS or cancer or whatever you care to scrape up—they've all been refuted. There's no good reason for doing it. I think if you tell people what the anatomy is, people are pretty sensible. If you describe how much is removed, and what is removed, the sort of thing I did in the paper—use the paper, and in just those terms. That paper was really aimed at the public, not at the medical people—there's no point in telling the medical people about it. If you talk to the public and show them pictures, then they will understand immediately what the problem is. It doesn't require great insight. You see, a lot of people don't know, unless they see the pictures.

B: Dr. Taylor, you've been very helpful.

T: I'm always glad to cooperate so long as people don't misquote me. I'm pretty blunt when I get into it. I'd rather leave you with the impression that we're really very ignorant, and this is the astonishing thing about the whole scenario is our ignorance—both in the structure, and in the physiology. And everyone thinks they know. Everyone thinks they know everything about sex, that needs to be known. Everyone's read a book or done something, and you can't tell them anything, and so I think the article came as a bit of a surprise to people who thought they knew, but they didn't. And once they know then [the study] becomes a sort of a manual and they can use it to explain things. That's what I'm told.

B: Well it's been very informative. Thank you very much for your time.

T: Not at all.

END

(This interview took place in two parts on Tues. Feb. 4th and Fri. June 13, 1997.)

[Click here to go to the new website: The Ridged Band—Specialized Sexual Tissue](#)

[The prepuce: specialized mucosa of the penis and its loss to circumcision, by John R. Taylor, A.P. Lockwood and A.J. Taylor](#) appeared in the 1996 British Journal of Urology, 77, pp. 291-295.

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