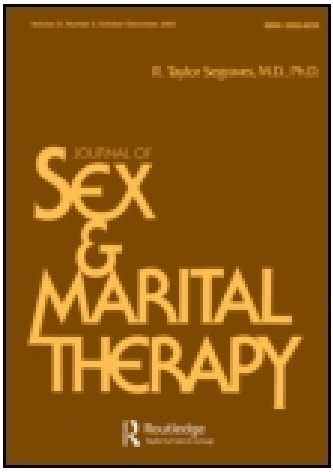

Journal of Sex & Marital Therapy

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/usmt20

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Published online: 02 Feb 2011.

To cite this article: A. Faix , J. F. Lapray , C. Courtieu , A. Maubon & Kerry Lanfrey (2001) Magnetic Resonance Imaging of Sexual Intercourse: Initial Experience, Journal of Sex & Marital Therapy, 27:5, 475-482, DOI: 10.1080/713846807

To link to this article: http://dx.doi.org/10.1080/713846807

Journal of Sex & Marital Therapy, 27:475–482, 2001

0092-623X/01 $12.00 + .00

Magnetic Resonance Imaging of Sexual Intercourse: Initial Experience

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The objective of this study was to investigate sexual intercourse with magnetic resonance imaging (MRI). A volunteer couple (30 year-old male, 27-year-old female) with a normal sex life, had face-to-face sexual intercourse (reversed missionary position) under MRI. Static and dynamic T2-weighted sagittal sequencies were acquired on the midline before and during vaginal penetration. In this position, before penetration, the vagina was parallel to the pubococcygeal line and had normal anterior convexity. After penetration, accentuation of the vaginal convexity was observed, produced by the penile gland reaching the anterior cul-de-sac and contact with the anterior vaginal wall. The posterior bladder wall was pushed forward and upward, the uterus upward and backward. In this initial experience, we observed a preferential contact of the penis in erection with the anterior vaginal wall and the anterior cul-de-sac in the face-to-face sexual position. MRI allows a noninvasive assessment of sexual intercourse.

INTRODUCTION

The anatomy of sexual intercourse has never previously been investigated using modern imaging techniques. In the 15th century, Leonard de Vinci (1901) attempted to reproduce a schema of sexual intercourse. He hypothesized that the axis of the penis was in a straight line during coitus. Anatomical studies of cadavers have found that there is a slight posterior curve of the vagina with an open backwards angle of about 140° (Zwang, 1990). Theoretically, in the "missionary" position (face-to-face position), the anterior wall of the vagina is preferentially stimulated; it is the reverse in the posterior

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position. Zwang (1990) showed these preferential contacts in theoretical diagrams. Because these descriptions were merely theoretical, interest grew in studying the anatomy of sexual intercourse using magnetic resonance imaging (MRI). MRI has been demonstrated to be a useful tool for the radiological assessment of the female pelvis and the penis (Lapray, 1999).

MATERIAL AND METHODS

The MRI utilized is a General Electric 1 Tesla. Other specifications include:

- Single-shot fast spinecho (SSFSE)
- Static T2-weighted sagittal sequencies
- TE (time echo) of 180
- TR (time repetition) of 6000 ms
- Matrix of 256–192
- Diameter of 60 centimeters

Three 15–minute sessions were utilized, with 30 minute intervals between the sessions.

Couple

The subjects were volunteers with a normal sex life together. The male was 30 years old, was 180 cm, and 80 kgs, with an normal penis and an erection of 16 cm. The female was 27 years old, 167 cm, and 52 kgs, with no gynecological problems and one birth in 1995.

Sexual Intercourse Sessions

Only one position was used—the male lying flat on his back and the female on top of the male with legs slightly open. The MRI tube was very narrow, allowing a space of 3 to 5 cm between the back of the female and the tube when the couple was in position.

First Session

This session occurred without penetration in order to initialize parameters. A sheet was draped on the window between the medical team and the couple as a means of respecting privacy, but permanent audio contact.

Second Session

The couple initiated sexual intercourse outside the MRI. Laying down on the ramp in position, they were then moved into the tube. During a 15-minute

check of the position on the midlne, there was a partial detumescence of the penis.

Third Session

The female had to urinate before the last session.

Radiological Evaluation

We examined the pubococcygeal line which links the pubis and the coccyx together, the axis of the vagina, the penis inside the vagina, and the anatomical connections between the penis and the female anatomical structures.

RESULTS

First Session

The axis of the vagina was roughly parallel to the pubococcygeal line and it had a moderated anterior convexity which was parallel to the elevator ani (see Figure 1). The bladder and the area of the bladder neck, the two pubes,

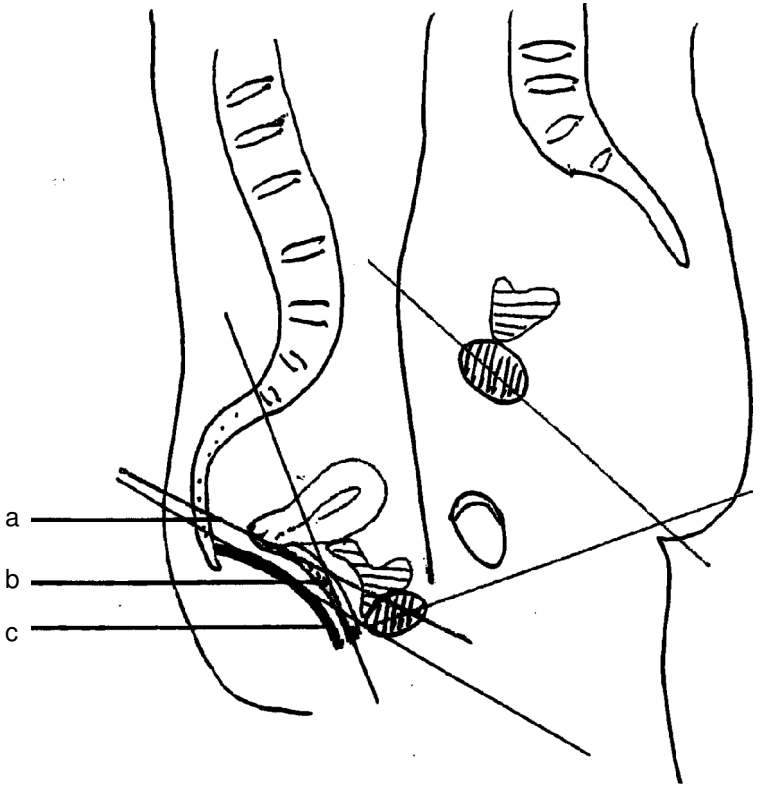

FIGURE 1. Line drawing of first session, before penetration, showing pubococcygeal line (a), vagina axis (b), and elevator ani (c).

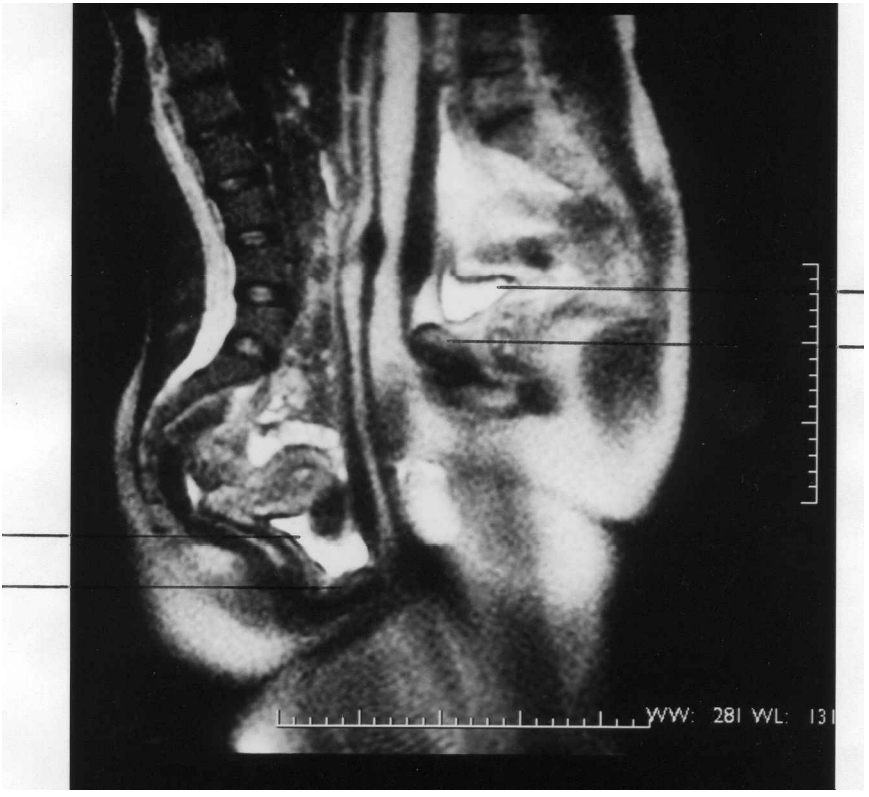

FIGURE 2. MRI photograph of first session, showing female bladder (1a) and pubis (1b), and male bladder (2a) and pubis (2b).

and the female elevator ani were visible in the imaging. The female is lower than the male by 14 cm (see Figure 2).

Second Session

The penis (corpus cavernosum) had a high signal in T2-weighted sequence. There was a posterior shift of the uterus and a preferential contact of the penis with the anterior wall of the vagina, the anterior cul-de-sac, the urethra (which was not really seen), Halban's fascia, and the posterior bladder (see Figure 3). Because of a partial detumescence of the penis, the study was stopped 30 minutes before the third and last session to allow the male to obtain a better erection.

Third Session

There was an increase in the convexity of the anterior vagina with the increase in the contact with the anterior cul-de-sac and the bladder (almost

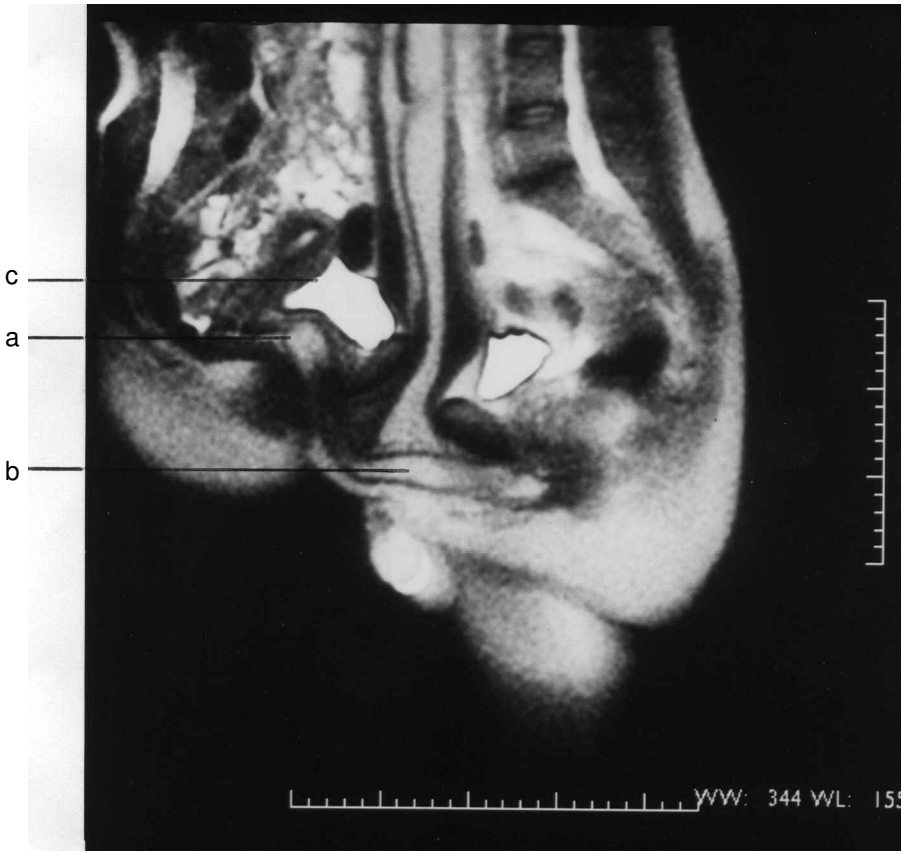

FIGURE 3. MRI photograph of second session, following penetration, showing penis (gland) with high signal in T2 weighted sequencie in the anterior cul-de-sac (a), penis (perineal part) (b), and female bladder (c).

empty) which was pushed forward and upward (see Figure 4) . The angle of the penis was 60° between the perineal and the vaginal parts and the length inside the vagina was about 10 cm (because part was outside the vagina and because of partial detumescence) (see Figure 5).

Geometric and Comparative Analysis

There was a modification of the vaginal axis from 140° to 90° and a shifting of the uterus (see Figure 6). There also was a raising of the bladder neck and the urethra through the anterior wall of the vagina.

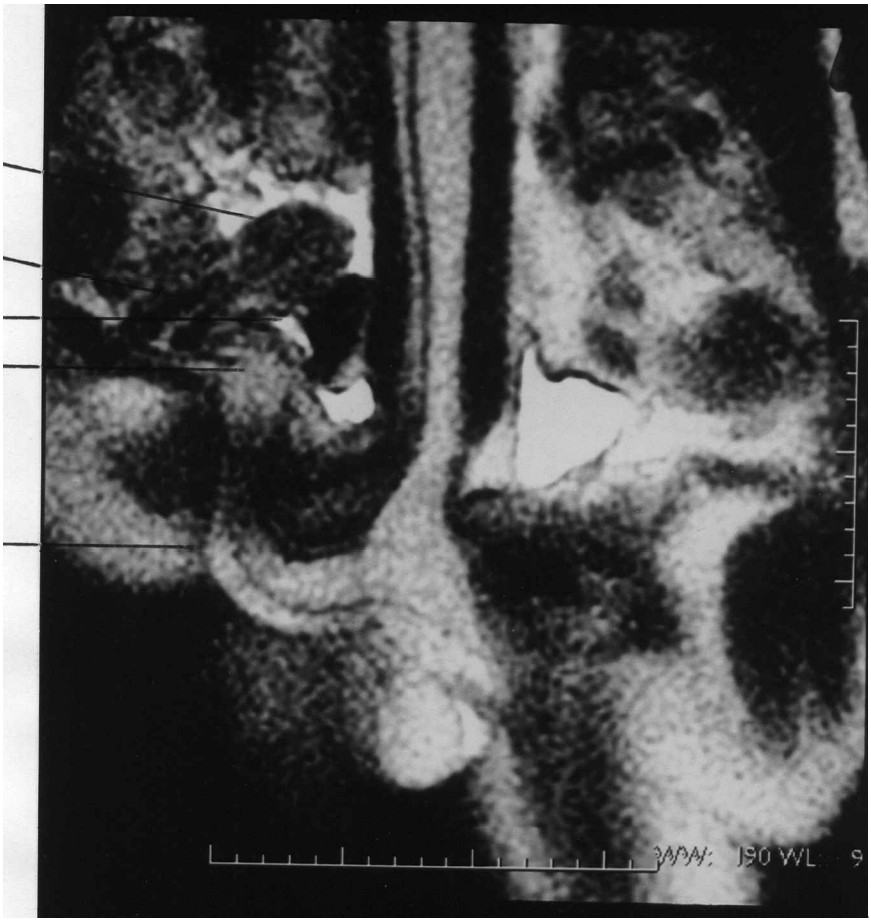

FIGURE 4. MRI photograph of third session, showing gland and anterior cul-de-sac (a), female bladder (b), cervix (c), uterus (d), and central node of the perineum (e).

DISCUSSION

One could question whether this coital experience in a laboratory is representative of the physiology of sexual intercourse. It was very difficult to move in the MRI tube and the man had difficulty maintaining an erection. The ideal future objective is to examine dynamic sessions, other positions, other couples and maybe the use of an open MRI.

CONCLUSION

This appears to be the first anatomical study of sexual intercourse by MRI. In the reverse missionary position, the preferential areas stimulated by the penis seems to be the anterior wall of the vagina and the anterior cul-de-sac.

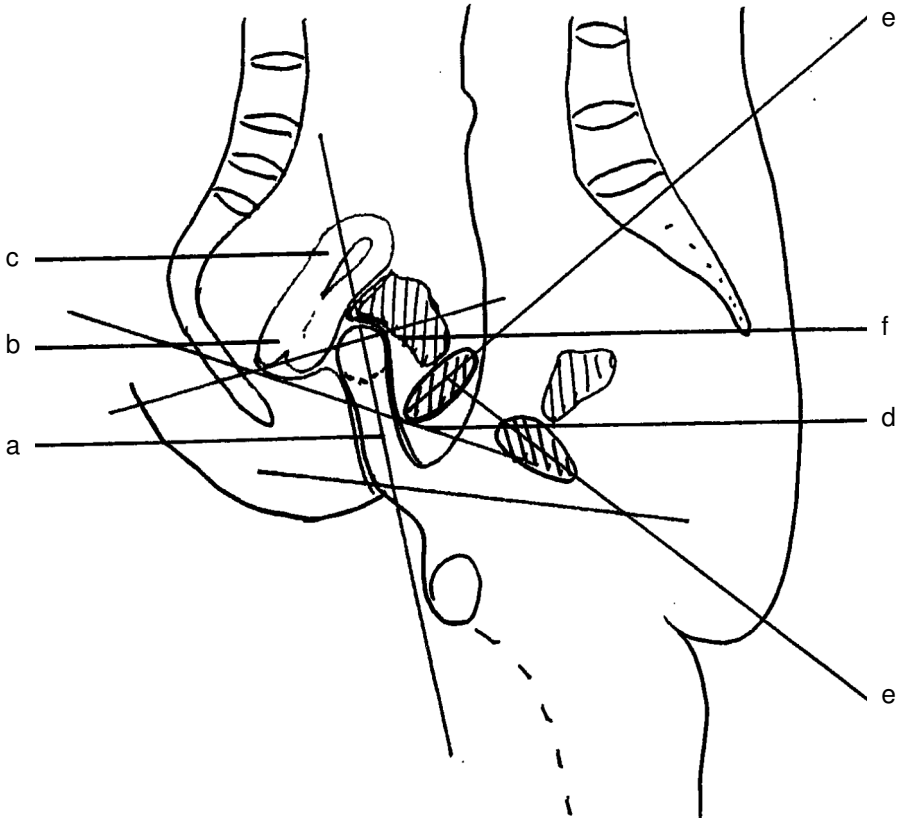

FIGURE 5. Line drawing of third session, showing penis-vagina axis (a), fornix (b), uterus (c), puboccocygeal line (d), angle of pubis (e), and bladder neck (f).

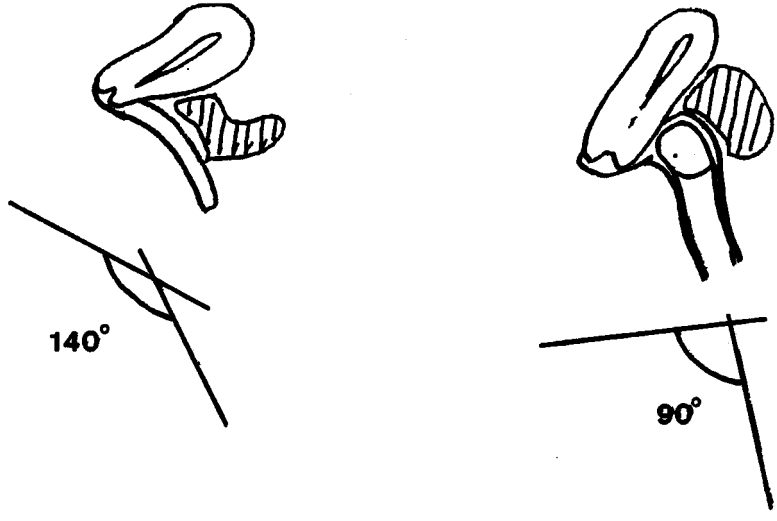

FIGURE 6. Geometric and comparative analysis: Modification of the vaginal axis; Shifting of the uterus; and Raising of the bladderneck.

Additional sessions are planned to help further the understanding of the anatomical aspects of sexual intercourse. MRI could be a new tool to assess the physiology of sexual intercourse.

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