



# Influence of age on the location of oocyte meiotic spindle 年紀與卵子紡錘體的位置的關係

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## Study question

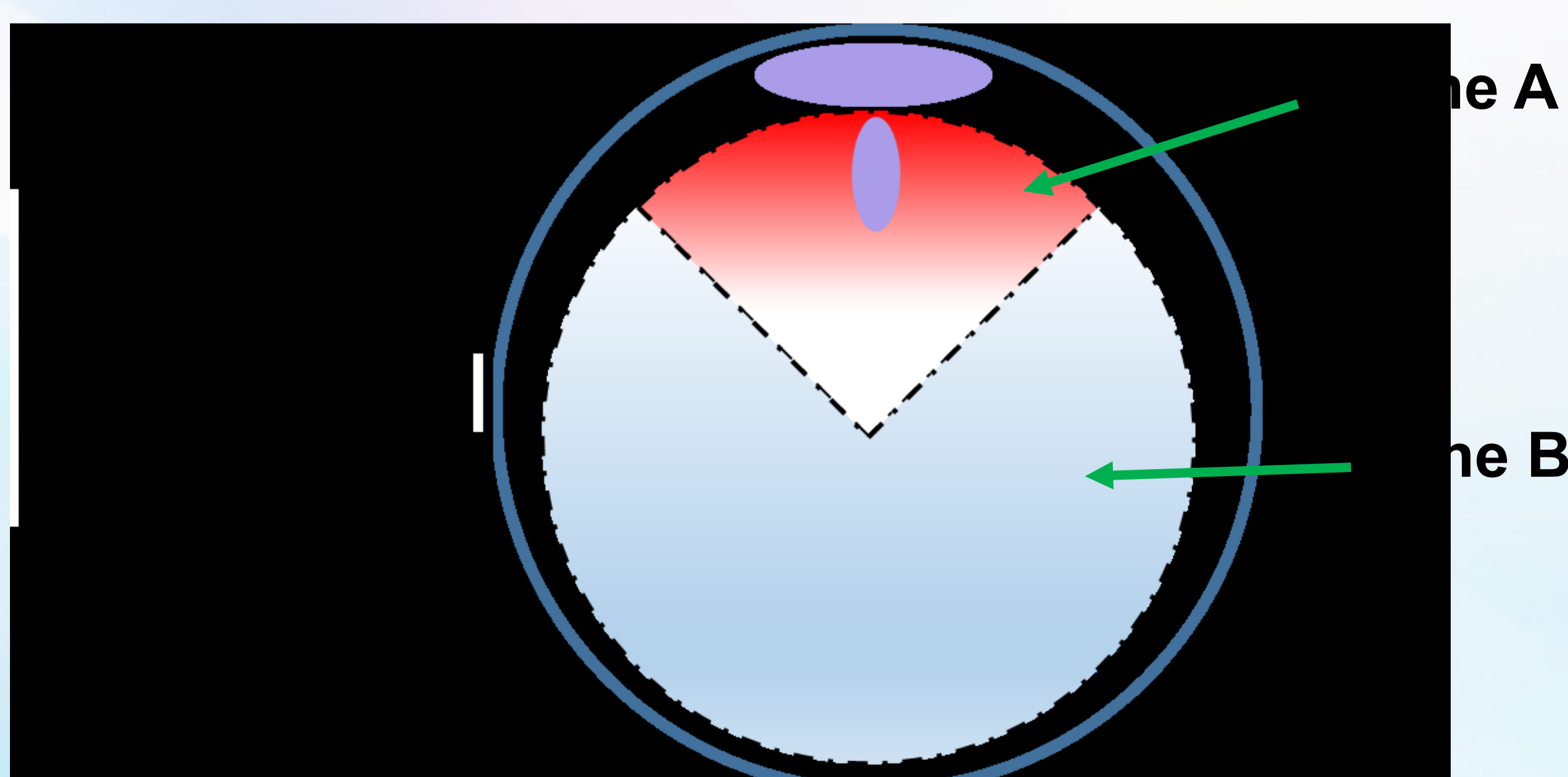
Is there a correlation between women's age and the meiotic spindle location deviation regarding the polar body position in the human oocyte?

## Study design;size;duration

This prospective study included metaphase II oocytes collected from 31 infertile women at Chi Mei Medical Center from September 2018 to May 2019. Totally, 114 metaphase II oocytes were included in this study. The use of donor oocytes or cycles with donor sperm were excluded from this study.

## Materials;setting;methods

The oocytes were obtained after controlled ovarian stimulation in patient undergoing transvaginal oocyte retrieval for ICSI. About 4 to 6 hours after oocyte retrieval, the denuded oocytes were observed under Poloscope (Oosight Meta software, <sup>TM</sup> Hamilton Thorne) before ICSI. The location of the meiotic spindle and the position of the first polar body were assessed. According to the angle of spindle deviation from the first polar body position, the spindle location was classified into two zones: angle of deviation within 45° was zone A and the angle of deviation more than 45° was zone B (Figure 1). The percentage of oocytes with visualized meiotic spindle and percentage of oocytes with spindles within zone A and zone B were calculated. The oocytes were divided into two groups according to the age of women from which the oocytes were obtained. Group 1 included oocytes from women ≥ 40 years old and group 2 included oocytes from women < 40 years old. Correlation between the age of women from which the oocytes were obtained and the spindle location was analyzed. The Chi-square test was used for statistical analysis.  $P < 0.05$  was considered statistically significant.



## Main result

	Group 1 (≥40 y/o)	Group 2 (<40 y/o)	P. value
No. of cycles	11	20	
Total no. of MII oocytes	24	86	
<b>Meiotic spindle</b>			
visible	75.0% ( 18/24 )	75.6% ( 65/86 )	0.953
invisible	25.0% ( 6/24 )	24.4% ( 21/86 )	
<b>Spindle location</b>			
zone A	72.2% ( 13/18 )	83.1% ( 54/65 )	0.302
zone B	27.8% ( 5/18 )	16.9% ( 11/65 )	

Group 1: Oocyte from women ≥40 years ; Group 2: Oocyte from women < 40 years

Among the included 114 metaphase II oocytes, 24 oocytes were obtained from women aged more than 40 years old and 90 from women younger than 40. The results were showed as the table 1. We discovered that approximate 75% of the oocytes showed visible meiotic spindle in both age groups (75% in group 1, 75.6% in group 2,  $p=0.955$ ). The 81.4 % of the oocytes were observed with spindle location in zone A and the 18.6% were in zone B.

There was no significant difference between the women's age and the degree of spindle location deviation (72.2% oocytes with spindle in zone A and 27.8% in zone B in group 1; 83.8% oocytes with spindle in zone A and 16.2% in zone B in group 2;  $p=0.261$  ).

## Conclusion

18.6% of oocytes showed remarkable deviation of the meiotic spindle location from the first polar body position. Although statistically non-significant, aged women tend to have a more deviation of the meiotic spindle location from the first polar body position. Accordingly, we suggest routine Poloscope examination in aged women with limited oocytes before ICSI.