American Society for Reproductive Medicine 2017 Scientific Congress & Expo
October 28 to November 1, 2017 • San Antonio, TX, USA

Title

CHOICE OF TRIGGER MEDICATION DOES NOT AFFECT OOCYTE MATURITY AT RETRIEVAL

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Objective:
Traditionally, final oocyte maturation with Human Chorionic Gonadotropin (hCG) was a used as a standard component of IVF stimulation protocols. Currently, GnRH agonist and dual triggers have become the treatment of choice, as they have nearly eliminated the incidence of Ovarian Hyperstimulation Syndrome (OHSS).
This study sought to compare whether choice of trigger medication had an effect on oocyte maturation rates.

Design:
Retrospective cohort analysis

Materials and Methods:
The study included patients undergoing IVF who were stimulated using the GnRH antagonist protocol between January 2002 and February 2017. Only patients classified as normal responders (AMH ≥1pmol/L, basal antral follicular count ≥10 and basal FSH ≤10IU/mL) were included. Cycles were segregated into 4 groups (Group A: GnRh agonist (leuprolide acetate 2mg); Group B: Dual trigger (leuprolide acetate 40IU + 1000IU p-hCH) ; Group C: Recombinant hCG (250 µg R-hCG); and Group D: purified hCG (10,000IU P-hCG)). Data was analyzed by ANOVA with Tukey's studentized range test, with significance at $p < 0.05$. Multivariate logistic regression analysis was performed to distinguish possible influence of clinical factors on the rate of oocyte maturation.

Results:
Of the 2,049 IVF cycles included, dual trigger was most commonly used (1172 cycles (57.3%)) followed by R-hCG:498 cycles (24.3%), GnRH agonist was administered least (178 cycles (8.6%)) (P-hCG: 201 cycles (9.8%))(Table 1).
Overall, 62.9% of oocytes reached the MII stage of development. When using P-hCG as a control group, significant differences between the MII rates per group were observed. ($p < 0.0001$) (Figure 1). When adjusted for age, body mass index and the total number of eggs retrieved; no difference was observed between trigger method and the rate of MII oocyte formation (Table 2) (Figure 1).

Conclusions:
The GnRH agonist and dual triggers has proven to be a valuable option when treating patients who are at risk of OHSS and offers a greater margin of safety compared with the hCG trigger protocol. The study demonstrates no significant differences in the number of mature oocytes at retrieval when comparing different trigger strategies. Trigger medication choice can be based on patient-specific clinical characteristics that can reassure a decreased risk of OHSS without compromising oocyte maturity rates.

Support:
None.

Table 1.

Cycle demographics, and post retrieval metrics.					
Variable	GnRH agonist N=178	Dual trigger N=1172	R-hCG N=498	P-hCG N=201	P value
Mean Age	34.9 (±4.1)	35.8 (±3.8)	37.1(±4.0)	36.9 (±4.1)	<0.0001
Mean BMI	23.4 (±4.4)	23.6 (±4.2)	23.1 (±3.8)	25.2 (±5.6)	
# Eggs retrieved	4254	22485	7210	2575	
Mean Eggs retrieved	24.1 (±11.3)	19.4 (±8.8)	14.9 (±6.7)	13.2 (±6.1)	
# MII oocytes	2548	14302	4542	1613	
Mean MII oocytes	14.4 (±12)	12.3 (±9.2)	9.4 (±6.4)	8.2 (±5.8)	
% Maturity	59.8	63.6	62.9	62.4	

Table 2.

Odds ratio estimates and profile – likelihood confidence intervals			
Variable	**Odds ratio estimates**	**95% Wald confidence limits**	**P value**
Age (n= 2136)	1.122	1.07 – 1.17	**<0.0001**
BMI (n= 2136)	0.977	0.96 – 0.99	**0.0124**
Eggsretrieved (n=36524)	0.804	0.79 – 0.81	**<0.0001**
Dual trigger vs P-hCG	0.968	0.74 – 1.24	NS
GnRH agonist vs P-hCG	1.19	0.82 – 1.74	NS
R-hCG vs P-hCG	0.967	0.733 – 1.274	NS

Figure 1.

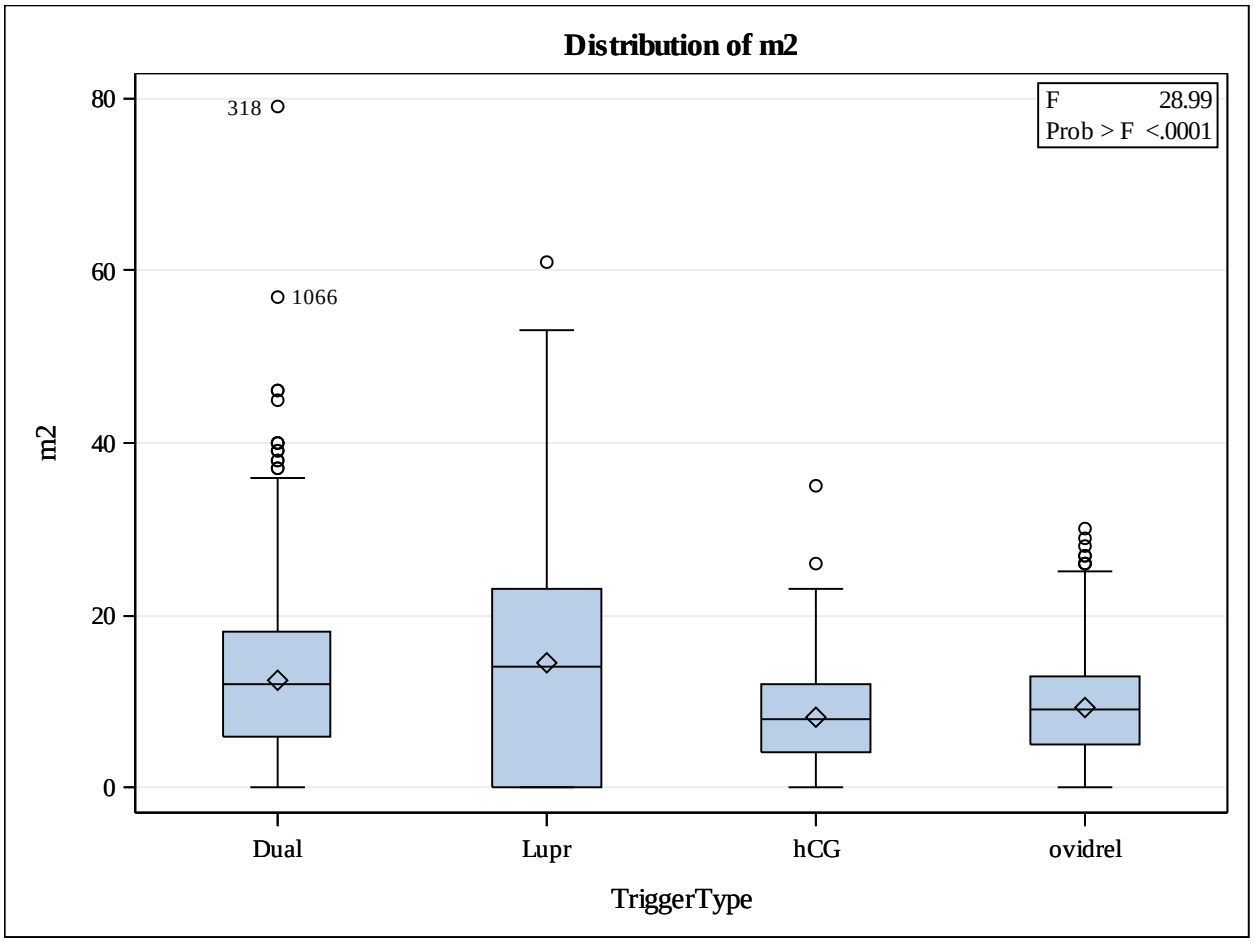
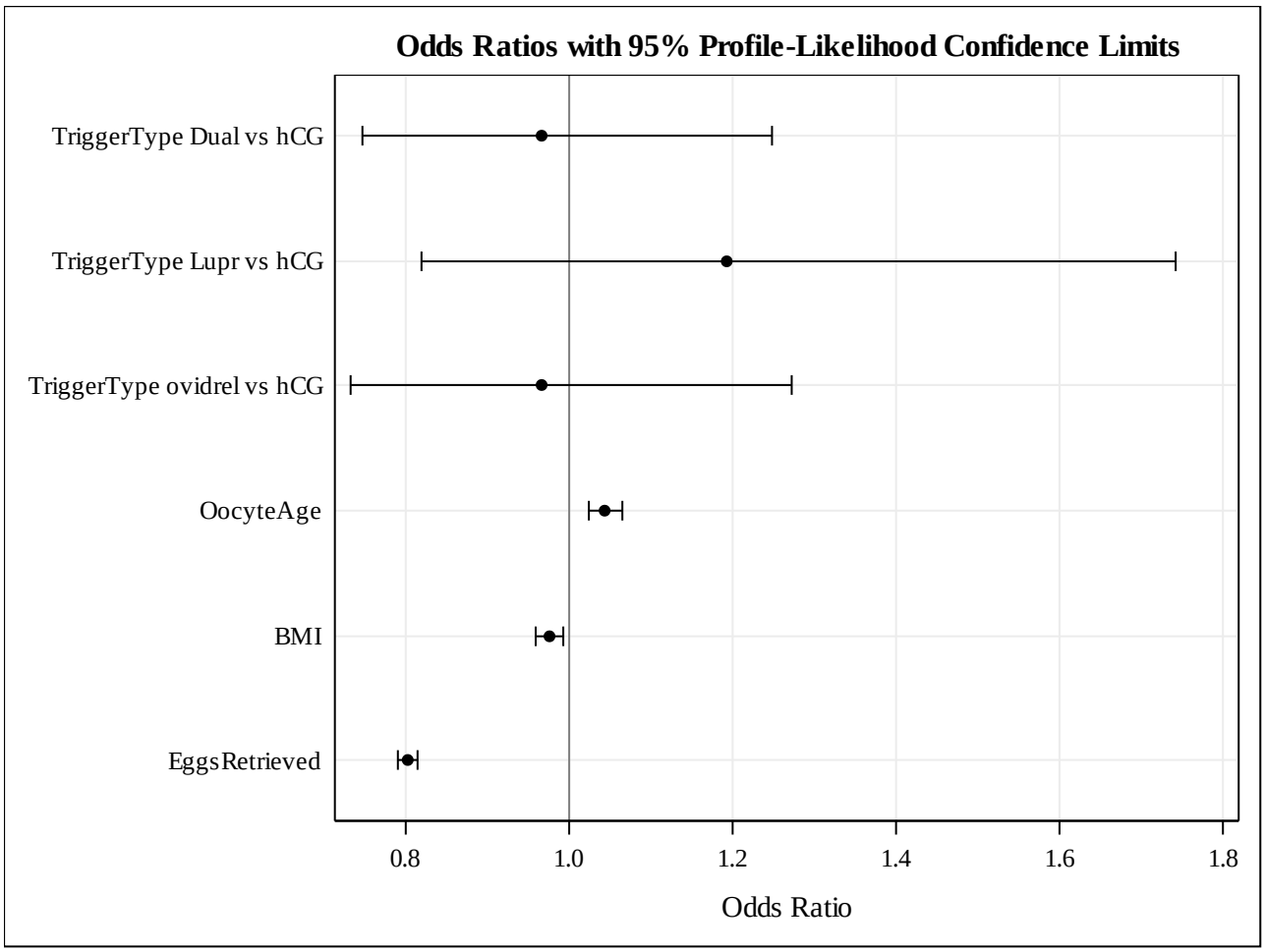

Distribution of m2
F 28.99
Prob > F <.0001
318
1066
80
60
40
20
0
m2
Dual
Lupr
hCG
ovidrel
TriggerType

Figure 2.


Odds Ratios with 95% Profile-Likelihood Confidence Limits
TriggerType Dual vs hCG
TriggerType Lupr vs hCG
TriggerType ovidrel vs hCG
OocyteAge
BMI
EggsRetrieved
0.8
1.0
1.2
1.4
1.6
1.8
Odds Ratio