

The comparison of different bearing surfaces in THA survivorship

Supplementary 1. The complete search terms used in this study.

N = 467 (hip arthroplast* OR hip replace* OR hip prosthe*) AND (metal OR chromium* OR cobalt* OR ceramic* OR alumina* OR aluminum oxide* OR polyethylene* OR highly crosslinked*) AND random* NOT(animal* NOT human*).

Supplementary 2. The random effects model used in WinBUGS software for statistical analysis of network meta-analysis in this study.

```
# ns=number of studies
# r=number of events
# n=sample size
# t=treatment
# nt=number of treatments
# na=number of arms
# ref=reference treatment
model {
  for(i in 1:ns) {
    w[i,1]<- 0
    theta[i,t[i,1]]<- 0
  }
  ##binomial likelihood
  for (k in 1:na[i]) {r[i,t[i,k]] ~ dbin(p[i,t[i,k]],n[i,t[i,k]])}
  ##parameterization
  logit(p[i,t[i,1]])<- u[i]
  for (k in 2:na[i]) {
    logit(p[i,t[i,k]])<- u[i] + theta[i,t[i,k]]
    theta[i,t[i,k]] ~ dnorm(md[i,t[i,k]],precd[i,t[i,k]])
    md[i,t[i,k]]<- d[t[i,k]] - d[t[i,1]] + sw[i,k]
    w[i,k]<- theta[i,t[i,k]] - d[t[i,k]] + d[t[i,1]]
    sw[i,k]<- sum(w[i,1:k-1])/(k-1)
    precd[i,t[i,k]]<- prec *2*(k-1)/k }
  }
  ##priors
  for (i in 1:ns) {u[i] ~ dnorm(0,.0001)}
  tau ~ dnorm(0,1)(0,)
  prec<- 1/pow(tau,2)
  d[ref] <- 0
  for(k in 1:(ref-1)) {d[k] ~ dnorm(0,.0001)}
  for(k in (ref+1):nt) {d[k] ~ dnorm(0,.0001)}
  ##estimates
  for(i in 1:(nt-1)) {
    for (j in (i+1):nt) {
      OR[j,i]<- exp(d[j] - d[i])
      LOR[j,i]<- d[j] - d[i]}}
  ##ranking
  for(k in 1:nt) {
    order[k]<- rank(d[],k) # this is when the outcome is negative
    # change to 'order[k]<- nt+1-rank(d[],k)' if the outcome is positive
    most.effective[k]<- equals(order[k],1)
    for(j in 1:nt) {
      effectiveness[k,j]<- equals(order[k],j)
      cumeffectiveness[k,j]<- sum(effectiveness[k,1:j])}}
  for(k in 1:nt) {SUCRA[k]<- sum(cumeffectiveness[k,1:(nt-1)]) / (nt-1)}
  ##model fit
  for(i in 1:ns) {
    for (k in 1:na[i]) {
      Darm[i,k]<- -2*( r[i,t[i,k]] *log(n[i,t[i,k]]*p[i,t[i,k]]/ r[i,t[i,k]])+(n[i,t[i,k]] - r[i,t[i,k]])*log((n[i,t[i,k]]-n[i,t[i,k]]*p[i,t[i,k]])/(n[i,t[i,k]]- r[i,t[i,k]]))) }
    D[i]<- sum(Darm[i,1:na[i]]) }
  D.bar<- sum(D[])
}
# 1=MoPc, 2=MoPxI, 3=CoPc, 4=CoPxI, 5=CoC, 6=MoM
list(ns = 40 ,nt= 6, ref= 6,
```

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```
r=structure(Data=c(2, 0, 1, 2, NA, NA, 2, 0, NA, NA, 0, NA, 3, NA, 1, NA, NA, 8, 11, 2, NA, NA, NA, NA, 0, 1, NA, NA, NA, 1, 2, NA, NA, NA, 1, 0, NA, NA, NA, 0, 0, NA, NA, NA, 3, 0, NA, NA, NA, NA, 0, 1, NA, NA, NA, 2, 0, NA, NA, NA, 1, 1, NA, NA, NA, 0, 0, NA, NA, NA, 0, 0, NA, NA, NA, 2, NA, NA, NA, 4, 1, NA, NA, NA, 0, 0, NA, NA, NA, 0, 0, NA, NA, NA, 4, 2, NA, NA, NA, NA, 2, NA, NA, 1, NA, 1, NA, NA, 1, NA, 1, NA, NA, 3, NA, 11, NA, NA, NA, 3, NA, 2, NA, NA, NA, 1, 1, NA, NA, NA, 3, 3, NA, NA, NA, 2, 0, NA, NA, NA, 2, 4, NA, 8, NA, NA, NA, 1, NA, 10, NA, NA, NA, 6, NA, 3, NA, NA, NA, 6, NA, 2, NA, 2, NA, NA, 0, NA, 2, NA, NA, NA, 0, NA, 0, NA, NA, NA, 0, NA, 0, NA, NA, 0, NA, NA, 1, NA, NA, NA, 1, NA, 1, NA, NA, 1, NA, 2, NA, NA, 0, NA, NA, NA, 1, 3, NA, NA, 0, NA, NA, 1),.Dim=c( 40 , 6 )),  
n=structure(Data=c(21, 24, 22, 24, 1, 1, 36, 32, 1, 1, 34, 1, 137, 1, 131, 1, 1, 129, 114, 116, 1, 1, 1, 45, 45, 1, 1, 1, 1, 30, 31, 1, 1, 1, 26, 22, 1, 1, 1, 27, 27, 1, 1, 1, 1, 61, 61, 1, 1, 1, 1, 29, 32, 1, 1, 1, 1, 67, 66, 1, 1, 1, 1, 53, 49, 1, 1, 1, 60, 59, 1, 1, 1, 27, 27, 1, 1, 1, 1, 98, 1, 1, 1, 1, 102, 97, 1, 1, 1, 1, 98, 23, 1, 1, 1, 1, 28, 54, 1, 1, 1, 50, 50, 1, 1, 1, 50, 1, 1, 26, 1, 30, 1, 1, 1, 31, 1, 35, 1, 1, 1, 161, 1, 196, 1, 1, 1, 62, 1, 51, 1, 1, 1, 100, 100, 1, 1, 1, 1, 45, 65, 1, 1, 1, 1, 44, 48, 1, 1, 1, 1, 87, 177, 1, 69, 1, 1, 1, 71, 1, 95, 1, 1, 1, 194, 1, 52, 1, 1, 1, 158, 1, 23, 1, 20, 1, 1, 1, 52, 1, 52, 1, 1, 1, 30, 1, 30, 1, 1, 1, 1, 51, 1, 51, 1, 1, 1, 30, 1, 32, 1, 1, 1, 37, 1, 1, 1, 63, 1, 76, 1, 1, 1, 95, 1, 75, 1, 1, 82, 1, 1, 1, 1, 1, 125, 125, 1, 1, 29, 1, 1, 32),.Dim=c( 40 , 6 )),  
t=structure(Data=c( 1, 2, 3, 4, 1, 2, 5, NA, 1, 3, 6, NA, 1, 2, NA, NA, 1, 6, NA, NA, 1, 6, NA, NA, 1, 6, NA, NA, 1, 6, NA, NA, 3, 5, NA, NA, 3, 5, NA, NA, 3, 5, NA, NA, 3, 5, NA, NA, 4, 5, NA, NA, 4, 5, NA, NA, 4, 5, NA, NA, 4, 5, NA, NA, 1, 5, NA, NA, 1, 5, NA, NA, 1, 5, NA, NA, 1, 3, NA, NA, 1, 3, NA, NA, 2, 4, NA, NA, 2, 4, NA, NA, 2, 6, NA, NA, 2, 6, NA, NA, 2, 5, NA, NA, 5, 6, NA, NA, 3, 6, NA, NA ),.Dim=c( 40 , 4 )),  
na = c( 4, 3, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2 )  
)
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