

## DAFTAR PUSTAKA

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## LAMPIRAN

### 1. Surat Izin Penelitian



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,  
RISET, DAN TEKNOLOGI  
UNIVERSITAS HASANUDDIN  
**FAKULTAS KEDOKTERAN GIGI**

Jalan Perintis Kemerdekaan Km. 10, Makassar 90245  
Telepon (0411) 586012, Faximile (0411) 584641  
Laman [www.unhas.ac.id](http://www.unhas.ac.id) Email [fdhu@unhas.ac.id](mailto:fdhu@unhas.ac.id)

Nomor : 04999/UN4.13/PT.01.04/2023

30 November 2023

Hal : **Izin Penelitian**

Yth.

**1. Dekan Fakultas Kedokteran Gigi**

**2. Dekan Fakultas Teknik**

Universitas Hasanuddin

Makassar

Dengan hormat kami sampaikan bahwa mahasiswa **Program Studi Pendidikan Dokter Gigi Spesialis (PPDGS) Konservasi Gigi** Fakultas Kedokteran Gigi Universitas Hasanuddin bermaksud untuk melakukan penelitian.

Sehubungan dengan hal tersebut, mohon kiranya dapat diberikan **izin penelitian** kepada peneliti di bawah ini:

Nama / NIM	: <b>Irfan Fauzy Yamin / J025211005</b>
Waktu Penelitian	: Desember 2023 s.d. April 2024
Tempat Penelitian	: Laboratorium Konservasi Gigi Fakultas Kedokteran Gigi dan Laboratorium Metalurgi Fisik Fakultas Teknik Mesin Universitas Hasanuddin
Pembimbing	: Nurhayaty Natsir, drg., Ph.D., Sp.KG., Subsp., KR (K).
Judul Penelitian	: Evaluasi Resistensi Fraktur Gigi Insisivus Rahang Atas pada Beberapa Perbedaan Derajat Angulasi Pasak Fiber Polietilen

Demikian permohonan kami, atas perhatian dan kerjasama yang baik diucapkan terima kasih.

a.n. Dekan,  
Wakil Dekan Bidang Akademik dan Kemahasiswaan



**Acing Habibie Mude, drg., Ph.D., Sp.Procs., Subsp. OGST(K).**

NIP 198102072008121002

Tembusan:

1. Kepala Bagian Tata Usaha FKG Unhas ;
2. Kepala Laboratorium Konservasi Gigi FKG Unhas;
3. Kepala Laboratorium Metalurgi Fisik FT Unhas.

## 2. Surat Rekomendasi Persetujuan Komite Etik Penelitian



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI  
 UNIVERSITAS HASANUDDIN  
 FAKULTAS KEDOKTERAN GIGI  
 RUMAH SAKIT GIGI DAN MULUT PENDIDIKAN  
 KOMITE ETIK PENELITIAN KESEHATAN  
 Sekretariat : JL.Kandea No. 5 Makassar Lantai 2, Gedung Lama RSGM Unhas  
 Contact Person: drg. Muhammad Ikbal, Sp.Pro/Nur Aedah AR TELP. 081342971011/08114919191

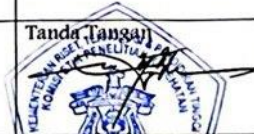



### REKOMENDASI PERSETUJUAN ETIK

Nomor: 0267/PL.09/KEPK FKG-RSGM UNHAS/2023

Tanggal: 28 Desember 2023

Dengan ini menyatakan bahwa protokol dan dokumen yang berhubungan dengan protokol berikut ini telah mendapatkan persetujuan etik:

No. Protokol	UH 17121006	No Protokol Sponsor	
Peneliti Utama	drg. Irfan Fauzy Yamin	Sponsor	Pribadi
Judul Peneliti	Evaluasi Resistensi Fraktur Gigi Insisivus Rahang Atas Pada Beberapa Perbedaan Derajat Angulasi Pasak Fiber Polietilen		
No. Versi Protokol	1	Tanggal Versi	20 Desember 2023
No. Versi Protokol		Tanggal Versi	
Tempat Penelitian	Laboratorium Konservasi Gigi, FKG Unhas, Laboratorium Metalurgi Fisik Fakultas Teknik Mesin Unhas		
Dokumen Lain			
Jenis Review	<input checked="" type="checkbox"/> Exempted <input type="checkbox"/> Expedited <input type="checkbox"/> Fullboard	Masa Berlaku 28 Desember 2023-28 Desember 2024	Frekuensi Review Lanjutan
Ketua Komisi Etik Penelitian	Nama: Dr. drg. Marhamah, M.Kes	Tanda Tangan 	Tanggal
Sekretaris Komisi Etik Penelitian	Nama: drg. Muhammad Ikbal, Sp.Pro	Tanda Tangan 	Tanggal

Kewajiban peneliti utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum diimplementasikan
- Menyerahkan laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan lapor SUSAR dalam 72 jam setelah peneliti utama menerima laporan.
- Menyerahkan laporan kemajuan (*progress report*) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah.
- Menyerahkan laporan akhir setelah penelitian berakhir.
- Melaporkan penyimpangan dari protokol yang disetujui (*protocol deviation/violation*)
- Mematuhi semua aturan yang berlaku.

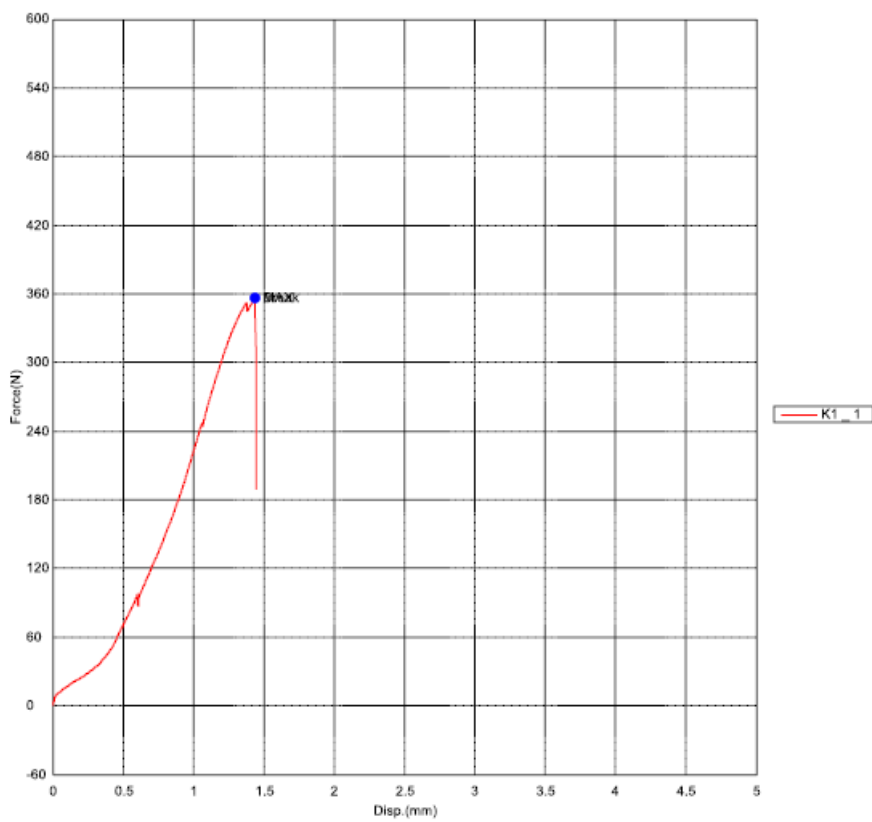
### 3. Hasil Uji Resistensi Fraktur Gigi

Kelompok P1 (Derajat Angulasi Pasak Fiber Polietilen 5°)

Key Word		Product Name	
Test File Name	K1.Itax	Method File Name	Geser Gigi.lmax
Report Date	2214/01/04	Test Date	2214/01/04
Test Type	Compression	Speed	0.5mm/min
Shape	Rod	No of Batches:	8
Qty/Batch:	1		

Name	Diameter	Height
Unit	mm	mm
K1 _ 1	1.0000	100.0000
K1 _ 2	1.0000	100.0000
K1 _ 3	1.0000	100.0000
K1 _ 4	1.0000	100.0000
K1 _ 5	1.0000	100.0000
K1 _ 6	1.0000	100.0000
K1 _ 7	1.0000	100.0000
K1 _ 8	1.0000	100.0000

Name	Max_Force	Max_Displ.	Break_Force	Break_Displ.
Paramet	Calc. at Entire Area	Calc. at Entire Area	Sensitivity 10	Sensitivity 10
ersUnit	N	mm	N	mm
K1 _ 1	356.284	1.43910	356.274	1.43943
K1 _ 2	250.219	1.69137	250.120	1.69353
K1 _ 3	241.679	1.25500	241.667	1.25800
K1 _ 4	192.577	1.32177	186.163	1.35427
K1 _ 5	446.497	2.57927	430.401	2.76633
K1 _ 6	207.164	0.81440	207.164	0.81440
K1 _ 7	248.788	1.60360	244.576	1.61250
K1 _ 8	307.082	1.35327	306.590	1.36550



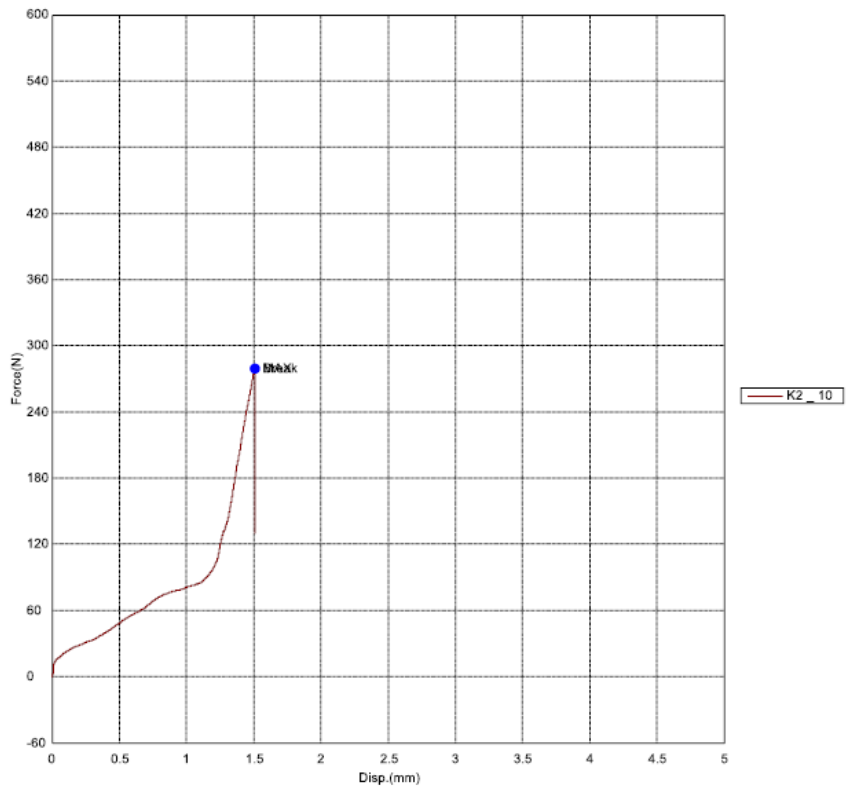
Grafik Uji Resistensi Fraktur Kelompok K1

## Kelompok P2 (Derajat Angulasi Pasak Fiber Polietilen 10°)

Key Word		Product Name	
Test File Name	K2.Itax	Method File Name	Geser Gigi.lmax
Report Date	2214/01/04	Test Date	2214/01/04
Test Type	Compression	Speed	0.5mm/min
Shape	Rod	No of Batches:	8
Qty/Batch:	1		

Name	Diameter	Height
Unit	mm	mm
K2 _ 9	1.0000	100.0000
K2 _ 10	1.0000	100.0000
K2 _ 11	1.0000	100.0000
K2 _ 12	1.0000	100.0000
K2 _ 13	1.0000	100.0000
K2 _ 14	1.0000	100.0000
K2 _ 15	1.0000	100.0000
K2 _ 16	1.0000	100.0000

Name	Max_Force	Max_Displ.	Break_Force	Break_Displ.
Parameter	Calc. at Entire Area	Calc. at Entire Area	Sensitivity 10	Sensitivity 10
Unit	N	mm	N	mm
K2 _ 9	142.088	0.27080	142.088	0.27080
K2 _ 10	279.000	1.50680	279.000	1.50680
K2 _ 11	332.554	2.04247	432.554	2.04247
K2 _ 12	126.154	1.78310	126.154	1.78310
K2 _ 13	330.416	2.69143	397.821	3.45877
K2 _ 14	331.353	3.53510	479.748	3.57777
K2 _ 15	104.985	0.74943	104.981	0.74980
K2 _ 16	136.397	0.39980	134.001	0.40247



Grafik Uji Resistensi Fraktur Kelompok K2

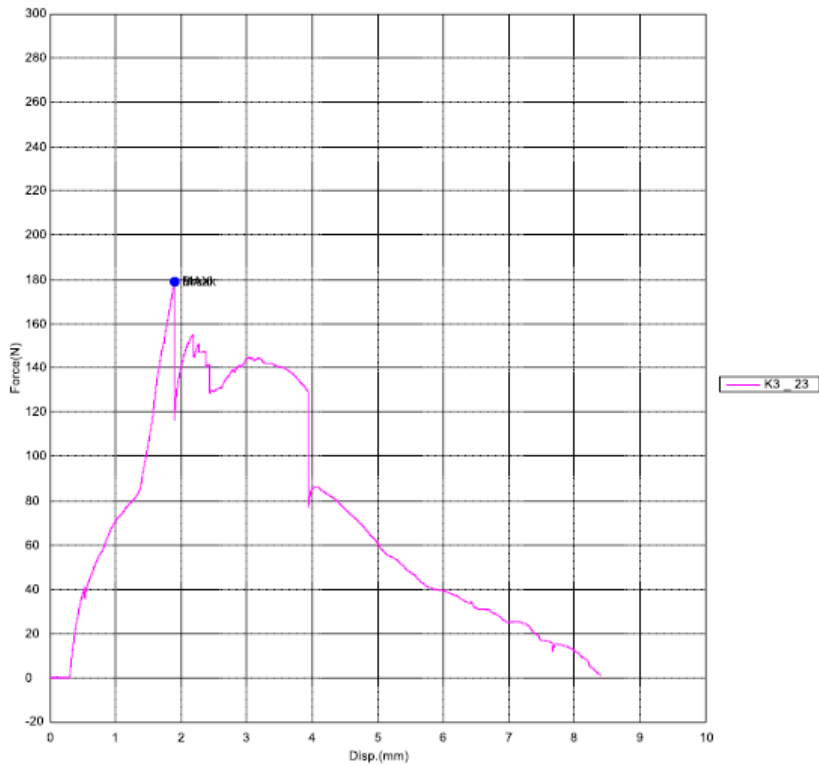


## Kelompok P3 (Derajat Angulasi Pasak Fiber Polietilen 15°)

Key Word		Product Name	
Test File Name	K3.Itax	Method File Name	Geser Gigi.lmax
Report Date	2214/01/04	Test Date	2214/01/04
Test Type	Compression	Speed	0.5mm/min
Shape	Rod	No of Batches:	8
Qty/Batch:	1		

Name	Diameter	Height
Unit	mm	mm
K3 _ 17	1.0000	100.0000
K3 _ 18	1.0000	100.0000
K3 _ 19	1.0000	100.0000
K3 _ 20	1.0000	100.0000
K3 _ 21	1.0000	100.0000
K3 _ 22	1.0000	100.0000
K3 _ 23	1.0000	100.0000
K3 _ 24	1.0000	100.0000

Name	Max_Force	Max_Displ.	Break_Force	Break_Displ.
Parameters	Calc. at Entire Area	Calc. at Entire Area	Sensitivity 10	Sensitivity 10
Unit	N	mm	N	mm
K3 _ 17	135.174	4.29943	135.174	4.29943
K3 _ 18	281.259	1.29347	277.558	1.30980
K3 _ 19	220.089	3.06877	220.089	3.06877
K3 _ 20	96.2393	0.64013	70.2087	2.32447
K3 _ 21	63.7372	0.49907	63.7372	0.49907
K3 _ 22	255.631	1.93277	255.631	1.93277
K3 _ 23	178.835	1.90180	178.835	1.90180
K3 _ 24	183.836	2.70010	74.8309	4.13277



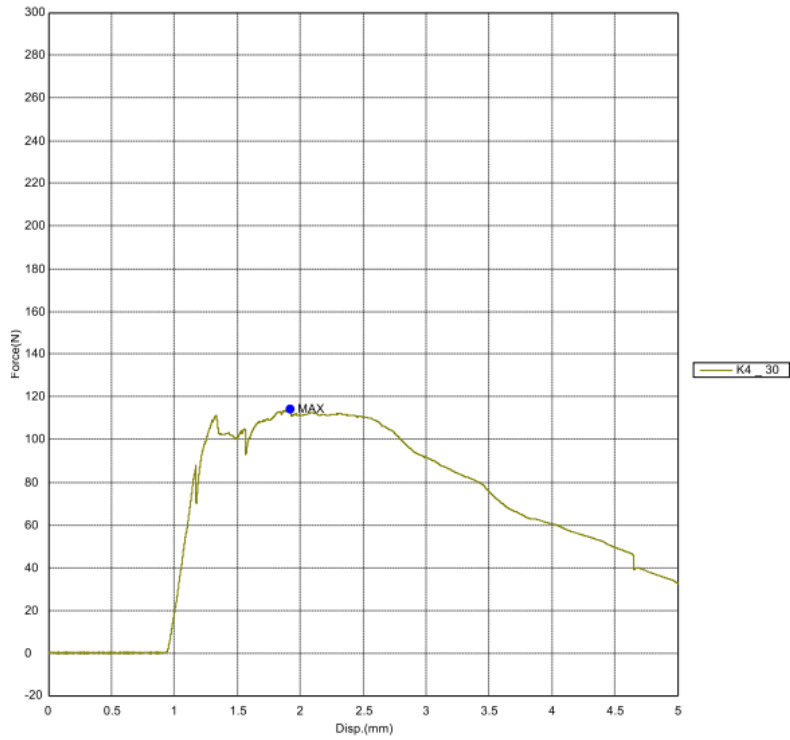
Grafik Uji Resistensi Fraktur Kelompok K3

## Kelompok K (Derajat Angulasi Pasak Fiber Polietilen 0°)

Key Word		Product Name	
Test File Name	K4.Itax	Method File Name	Geser Gigi.lmax
Report Date	2214/01/04	Test Date	2214/01/04
Test Type	Compression	Speed	0.5mm/min
Shape	Rod	No of Batches:	8
Qty/Batch:	1		

Name	Diameter	Height
Unit	mm	mm
K4 _ 25	1.0000	100.0000
K4 _ 26	1.0000	100.0000
K4 _ 27	1.0000	100.0000
K4 _ 28	1.0000	100.0000
K4 _ 29	1.0000	100.0000
K4 _ 30	1.0000	100.0000
K4 _ 31	1.0000	100.0000
K4 _ 32	1.0000	100.0000

Name	Max_Force	Max_Displ.	Break_Force	Break_Displ.
Paramete	Calc. at Entire Area	Calc. at Entire Area	Sensitivity 10	Sensitivity 10
rsUnit	N	mm	N	mm
K4 _ 25	152.312	1.53680	149.829	1.54880
K4 _ 26	114.239	2.27080	114.239	2.27080
K4 _ 27	183.682	1.03113	183.682	1.03113
K4 _ 28	221.829	1.10743	218.967	1.10877
K4 _ 29	189.065	1.84877	189.065	1.84877
K4 _ 30	114.099	1.92210	114.099	1.92210
K4 _ 31	207.689	1.36577	207.689	1.36577
K4 _ 32	135.100	1.40777	135.100	1.40777



Grafik Uji Resistensi Fraktur Kelompok K3

#### 4. Hasil Analisis Uji Statistik menggunakan SPSS 26 for Windows

##### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Gaya	.095	32	.200*	.963	32	.333

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

##### Mean

Gaya

Kelompok	Mean	Std. Deviation	Median	Minimum	Maximum
Angulasi 5	281.2862	84.96910	249.5050	192.58	446.50
Angulasi 10	222.8688	104.03853	210.5450	104.99	332.55
Angulasi 15	176.8513	75.64893	181.3400	63.74	281.26
Kontrol	164.7525	41.75154	167.9950	114.10	221.83
Total	211.4397	89.01790	199.8700	63.74	446.50

## ANOVA

Gaya

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	67081.754	3	22360.585	3.506	.028
Within Groups	178568.007	28	6377.429		
Total	245649.761	31			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: Gaya

LSD

(I) Kelompok	(J) Kelompok	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Angulasi 5	Angulasi 10	58.41750	39.92940	.155	-23.3742	140.2092
	Angulasi 15	104.43500*	39.92940	.014	22.6433	186.2267
	Kontrol	116.53375*	39.92940	.007	34.7421	198.3254
Angulasi 10	Angulasi 5	-58.41750	39.92940	.155	-140.2092	23.3742
	Angulasi 15	46.01750	39.92940	.259	-35.7742	127.8092
	Kontrol	58.11625	39.92940	.157	-23.6754	139.9079
Angulasi 15	Angulasi 5	-104.43500*	39.92940	.014	-186.2267	-22.6433
	Angulasi 10	-46.01750	39.92940	.259	-127.8092	35.7742
	Kontrol	12.09875	39.92940	.764	-69.6929	93.8904
Kontrol	Angulasi 5	-116.53375*	39.92940	.007	-198.3254	-34.7421
	Angulasi 10	-58.11625	39.92940	.157	-139.9079	23.6754
	Angulasi 15	-12.09875	39.92940	.764	-93.8904	69.6929

\*. The mean difference is significant at the 0.05 level.

## 5. Dokumentasi Penelitian

### Alat dan Bahan Penelitian



Alat Penelitian

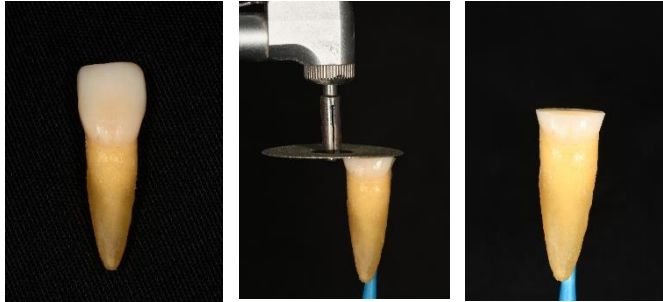


Bahan Penelitian

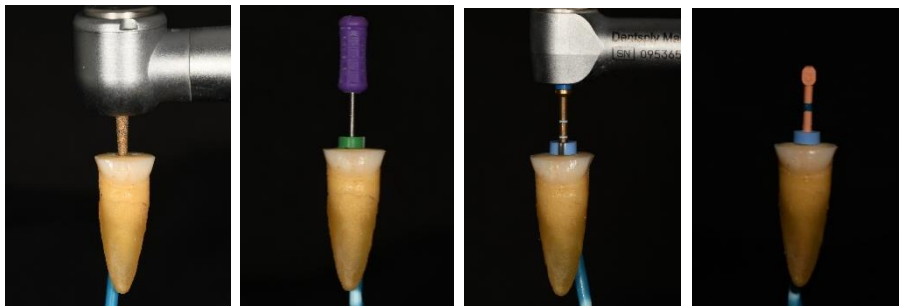


Alat Uji Resistensi Fraktur

## Dokumentasi Prosedur Penelitian



Pemotongan Mahkota Gigi  
Sampel Penelitian



Prosedur Perawatan Endodontik  
Sampel Penelitian

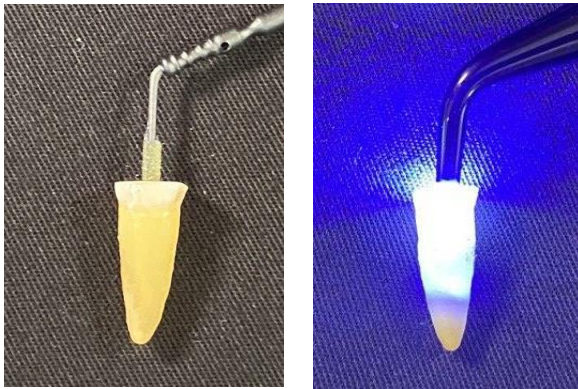


Pengambilan *Gutta-Percha*  
Sampel Penelitian





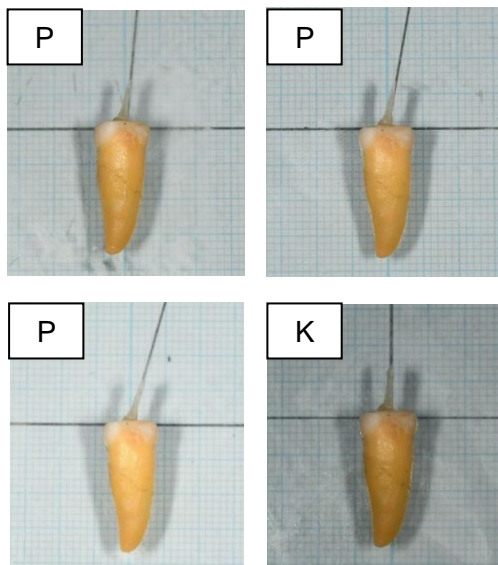
Persiapan Pasak Fiber Polietilen



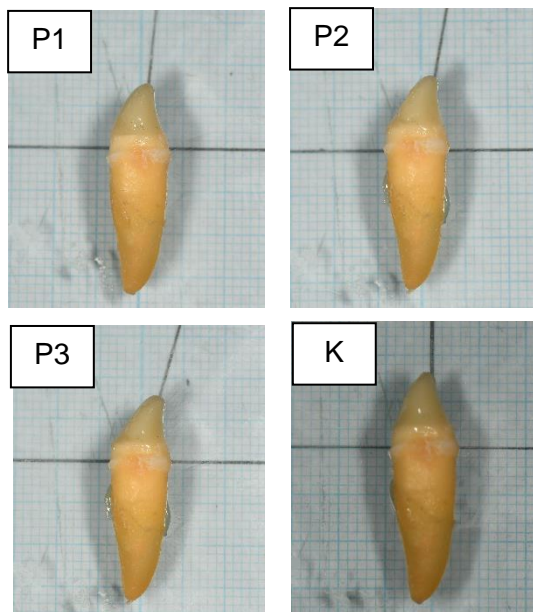
Aplikasi *Universal Adhesive*



Aplikasi Resin Semen *Dual-Cure*



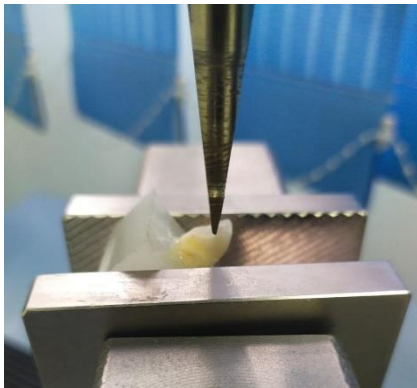
Prosedur Inseri Pasak Fiber Polietilen dengan  
Derajat Angulasi Berbeda  
(P1 = derajat angulasi 5°; P2 = derajat angulasi 10°;  
P3 = derajat angulasi 15°; K = derajat angulasi 0°)



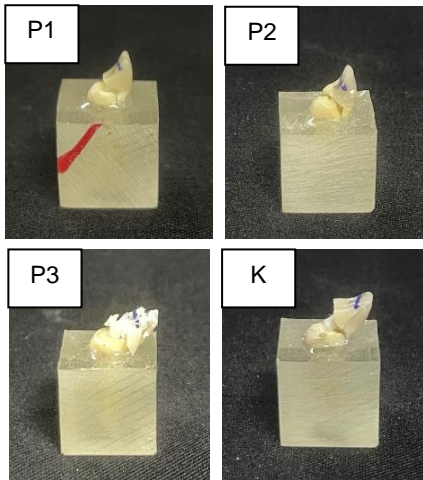
Pembuatan Core dengan Derajat Angulasi Berbeda  
(P1 = derajat angulasi 5°; P2 = derajat angulasi 10°;  
P3 = derajat angulasi 15°; K = derajat angulasi 0°)



Penanaman Sampel Penelitian pada Balok Akrilik



Uji Resistensi Fraktur menggunakan *Universal Texting Machine*



Hasil Uji Resistensi Fraktur pada Sampel Penelitian

## 6. Riwayat Hidup Penulis

### A. Data Pribadi

1. Nama : Irfan Fauzy Yamin
2. TTL : Biak, 17 September 1991
3. Jenis Kelamin : Laki-laki
4. Alamat : Jl. Pampang 2. Lr. 2 No. 15.  
Makassar, Sulawesi Selatan
5. Kewarganegaraan: Indonesia



### B. Riwayat Pendidikan

1. SD Negeri 1 Biak Kota 1997-2003
2. SMP Negeri 1 Biak Kota 2003-2006
3. SMA Negeri 1 Biak Kota 2006-2009
4. S1 (S.KG) FKG Universitas Hasanuddin 2009-2012
5. Profesi (drg.) FKG Universitas Hasanuddin 2012-2015
6. PPDGS Konservasi Gigi FKG Universitas Hasanuddin 2021-2024

### C. Riwayat Pekerjaan

1. PPT Daerah Kab. Biak Numfor, Papua
2. Penugasan Khusus Nusantara Sehat, Kab. Donggala, Sulawesi Tengah

### D. Karya Ilmiah terpublikasi

1. Yamin, IF. Natsir N. 2014. Dominant bacteria in root canal of necrotic teeth. *J Dentomaxillofac Sci*, 13(2), pp.113-6.
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